

**ZAP!**

**BOOM!**

**POW!**

Commodore VIC 20

**VIC-20**



Tim Hartnell and Mark Ramshaw

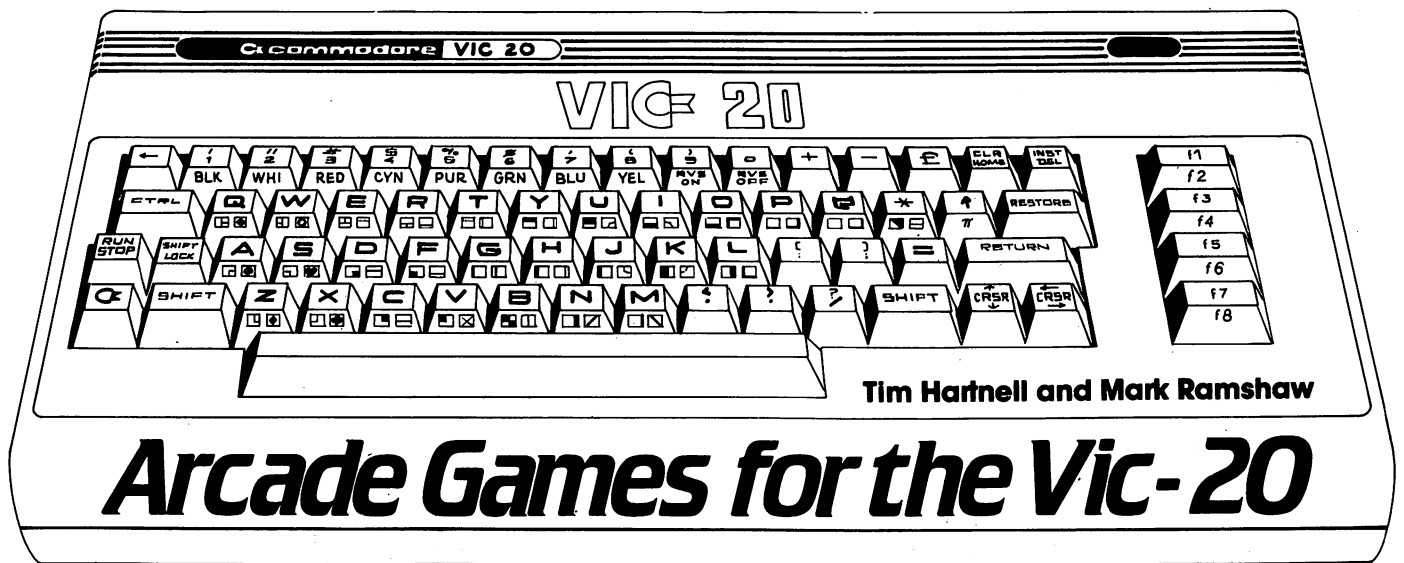
***Arcade Games for the Vic-20***



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# Contents

Introduction . . . . .	iv	Symphony for a Melancholy Computer	
Monster Maze . . . . .	1	with Zen Show . . . . .	81
Hyperspace Escape . . . . .	3	Fairway . . . . .	82
Gunfight . . . . .	5	Jelly Bean Space Swarm . . . . .	85
Scramble . . . . .	7	Superpoet . . . . .	87
Alien Marauders . . . . .	9	Zauper Attack . . . . .	88
Airplane . . . . .	11	Superbowl . . . . .	92
Marathon . . . . .	13	Zombie Island . . . . .	95
Wizard . . . . .	15	Motorcycle Jump . . . . .	97
Tail Gunner . . . . .	17	Traffic Jam . . . . .	99
Astro Wars . . . . .	19	Hangman 11 . . . . .	103
Swarm . . . . .	20	Antihang . . . . .	104
3-D Maze . . . . .	21	Treacle Balls . . . . .	106
Brands Hatch . . . . .	23	Craps . . . . .	108
Lightning Bolt . . . . .	25	Caveman . . . . .	111
Space Birds . . . . .	26	Tranquility Base . . . . .	113
Arkenstone . . . . .	28	Lodestar/3-D Maze . . . . .	114
Gomoku . . . . .	31	Vincent Van Vic . . . . .	117
Lunar Lander . . . . .	32	Monza . . . . .	118
Earth Defense . . . . .	35	Mento . . . . .	120
Nightmare Castle . . . . .	38	Flip . . . . .	121
Checkers . . . . .	41	Colormind . . . . .	122
Dambuster . . . . .	44	Cannibal Charlie . . . . .	124
Smash . . . . .	46	Monte Carlo Molecule . . . . .	125
Dogfight . . . . .	47	Noughts and Crosses . . . . .	127
Night Raid . . . . .	49	Sepulcher Organ . . . . .	128
Tank Battle . . . . .	51	Speedway . . . . .	129
Danger Star . . . . .	53	Battle . . . . .	133
Reversi . . . . .	56	Reverse . . . . .	135
Fruit Machine . . . . .	59	Space Fighter . . . . .	135
Dr Watson and Dr Audio . . . . .	62	Zodiac Fortune Teller . . . . .	137
Tight Squeeze . . . . .	64	Engulf . . . . .	139
Time Guardian . . . . .	66	Reaction . . . . .	140
Long John Silver . . . . .	68	Spacetrek . . . . .	142
Robot Nim . . . . .	70	Biorhythms . . . . .	145
Night on a Wild Mountain . . . . .	71	Billboard . . . . .	146
Victim . . . . .	71	Quack . . . . .	147
Evolution . . . . .	73	Magic Square . . . . .	148
Vic-et-un . . . . .	75	Simon . . . . .	149
Hangman . . . . .	77	Roulette . . . . .	150
Codebreaker . . . . .	79	Appendix—Error Messages . . . . .	155
Symphony for a Melancholy Computer . . . . .	80		

# Introduction

The VIC 20 is an exciting computer, designed to ensure that you can easily make the most of its colour and sound potential.

This book has been great fun to write, because the VIC “co-operates” so well with the games programmer. The BASIC is fast and unambiguous, the range of noises and colour effects is practically infinite, and—despite the slight limitations of the large graphics—allows some splendid screen displays to be created, especially with the POKE command.

Although we hope you’ll enter these programs as we’ve listed them here, and that you’ll enjoy playing them, the real value of a book like this lies in what you do with the programs to adapt them to make them your own, and the ideas you get from them to use in new programs of your own.

We’ve tried to choose a wide range of programs to show how flexible the VIC can be, and to give you some ideas of the kind of programs you can write and the easiest way to achieve the effects you desire.

The printer reproduces all the VIC graphics, and to make the listings as clear as possible, we’ve printed them fullsize, just as they rolled off the printer. Despite this, some of the colour commands may be a little hard to fathom out. Here’s a list of the colour commands, along with REVERSE ON and REVERSE OFF, as reproduced by the printer. This should help in reading the listings:

```
10 REM "■" BLACK
15 REM
20 REM "□" WHITE
25 REM
30 REM "■" RED
35 REM
40 REM "■" CYAN
45 REM
50 REM "■" PURPLE
55 REM
60 REM "■" GREEN
65 REM
70 REM "■" BLUE
75 REM
80 REM "■" YELLOW
85 REM
90 REM "■" REVERSE ON
95 REM
100 REM "■" REVERSE OFF
```

We must pay tribute to the great programming contributions made by Adam and Lance Burbidge, Christopher Hutber, M. Kendall, Graham Charlton, and Ken Mahogany. Without them, this book would have failed to explore the full potential of the VIC 20.

Tim Hartnell  
Mark Ramshaw

# Monster Maze

You start off in a maze filled with dots in the top left corner, although you don't actually appear until you begin to move. As you move through the maze eating dots you gain points.

Soon the maze monsters will be after you and you must take evasive action. If they eat you the game will end, as it will if you eat all the dots.

Eating one of the large red cherries means you can go and eat the monsters for extra points. But after a while they will get over their shock and come after you again. They are coloured purple when you can eat them.

W moves you up,

A left,

D right, and

X for down.

Good monster hunting!

```
10 POKE36879,13:CO=30720:SC=7680:CL=38400:POKE650,255
15 PRINT"#####"
20 FORI=7702T08164STEP22:POKEI+CO,6:POKEI,97:POKEI+21+CO,6:POKEI+21,225
25 NEXT:POKE8164,252:POKE8185,254
30 FORI=8165T08184:POKEI+CO,6:POKEI,98:NEXT
35 PRINT"#####"
40 FORI=7703T08143STEP22:POKEI+CO,1:POKEI,46:POKEI+19+CO,1:POKEI+19,46
45 NEXT:FORI=8144T08162:POKEI+CO,1:POKEI,46:NEXT
50 PRINT"#####"
55 PRINT"#####"
60 PRINT"#####"
65 PRINT"#####"
70 PRINT"#####"
75 PRINT"#####"
80 PRINT"#####"
85 PRINT"#####"
90 PRINT"#####"
95 PRINT"#####"
100 PRINT"#####"
105 PRINT"#####"
110 PRINT"#####"
115 PRINT"#####"
120 PRINT"#####"
125 PRINT"#####"
130 PRINT"#####"
135 PRINT"#####"
140 PRINT"#####"
145 PRINT"#####"
150 DIMX(2),Y(2),P(2),C(2)
155 FORI=0T02:P(I)=32:X(I)=9+I:Y(I)=12
160 NEXT:Y(1)=13
165 C(0)=2:C(1)=5:C(2)=7
170 DIMA(2),B(2):FORI=0T02
175 A(I)=INT(RND(1)*3-1):B(I)=INT(RND(1)*3-1):NEXT
```

```

185 P=7703:S=10:F=0:Q=0
200 FORI=0TO2
205 GETA$:IFA$=""THEN230
210 D=(A$="A")-(A$="D")+((A$="W")-(A$="X"))*22
215 IFPEEK(P+D)=46THENS=S+10:Q=Q+1:GOTO225
216 IFPEEK(P+D)=81ANDD<>0THENF=1:S=S+20:TI$="000000":GOTO225
217 IFPEEK(P+D)<>88ORF=0THEN224
218 FORPE=0TO2:IFSC+Y(PE)*22+X(PE)<>P+DTHEN223
219 S=S+50
220 Y(PE)=12:X(PE)=9+J:P(PE)=32
221 IFJ=1THENY(J)=13
223 NEXT:GOTO225
224 IFPEEK(P+D)<>32THEND=0:GOTO230
225 POKEP,32:P=P+D:POKEP+60,3:POKEP,81
230 PE=PEEK(SC+(Y(I)+B(I))*22+X(I)+A(I)):IFPE=32ORPE=46ORPE=81THEN300
235 X=P-SC:Y=INT(X/22):X=X-Y*22
240 B(I)=0:A(I)=0
241 IFF=1THENB(I)=(Y(I)<Y)-(Y(I)>Y):A(I)=(X(I)<X)-(X(I)>X):GOTO246
245 B(I)=(Y(I)>Y)-(Y(I)<Y):A(I)=(X(I)>X)-(X(I)<X)
246 PE=PEEK(SC+(Y(I)+B(I))*22+X(I)+A(I))
247 IFPE=32ORPE=46ORPE=81THEN350
250 B(I)=0
255 PE=PEEK(SC+Y(I)*22+X(I)+A(I))
260 IFPE=32ORPE=46ORPE=81THEN300
264 A(I)=0:IFF=1THENB(I)=(Y(I)<Y)-(Y(I)>Y):GOTO270
265 B(I)=(Y(I)>Y)-(Y(I)<Y)
270 PE=PEEK(SC+(Y(I)+B(I))*22+X(I)):IFPE=32ORPE=46ORPE=81THEN350
285 A(I)=INT(RND(1)*3-1):B(I)=INT(RND(1)*3-1)
290 PE=PEEK(SC+(Y(I)+B(I))*22+X(I)+A(I))
295 IFPE=32ORPE=46ORPE=81THEN350
299 A(I)=0:B(I)=0
300 IFRND(1)<.5THEN345
301 X=0:Y=0
305 IFB(I)<>0THEN320
310 Y=1:IFRND(1)>.5THENY=-1
315 GOTO325
320 X=1:IFRND(1)>.5THENX=-1
325 PE=PEEK(SC+(Y(I)+Y)*22+X(I)+X):IFPE=32ORPE=46ORPE=81THEN335
330 Y=-Y:X=-X:PE=PEEK(SC+(Y(I)+Y)*22+X(I)+X):IFPE<>32ANDPE<>46ANDPE<>81THEN350
335 A(I)=X:B(I)=Y:GOTO350
345 IFRND(1)>.8THEN235
350 POKESC+Y(I)*22+X(I),P(I):POKECL+Y(I)*22+X(I),1
351 IFF(I)=81THENPOKECL+Y(I)*22+X(I),2
355 Y(I)=Y(I)+B(I):X(I)=X(I)+A(I):P(I)=PEEK(SC+Y(I)*22+X(I))
356 IFSC+Y(I)*22+X(I)=PANDF=0THEN1000
360 POKECL+Y(I)*22+X(I),C(I):POKESC+Y(I)*22+X(I),88
361 IFF=1THENPOKECL+Y(I)*22+X(I),4
365 NEXT:IFTI$>"000015"THENF=0
366 IFQ>216THEN1000
370 GOTO200
1000 POKE650,0:FORI=1TO2000:NEXT
1005 PRINT"J#SCORE"S

```



# Hyperspace Escape

Sail boldly through space, zapping the asteroids and the alien. Watch out for the UFO, colliding with him or one of the asteroids wastes one of your 3 lives.

Z rotates you left,

C rotates you right, and

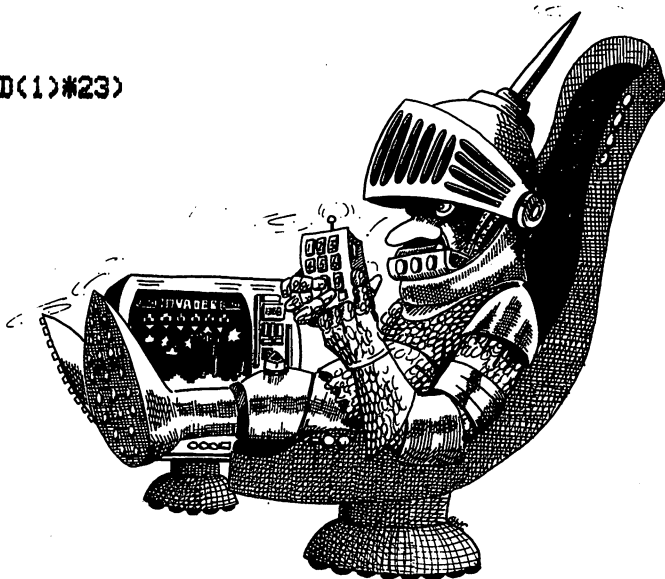
M thrusts you forward.

'return' will hyperspace you to another part of space, and

'space' will fire your laser cannon.

How many points can you gain by shooting asteroids and aliens before you are destroyed?

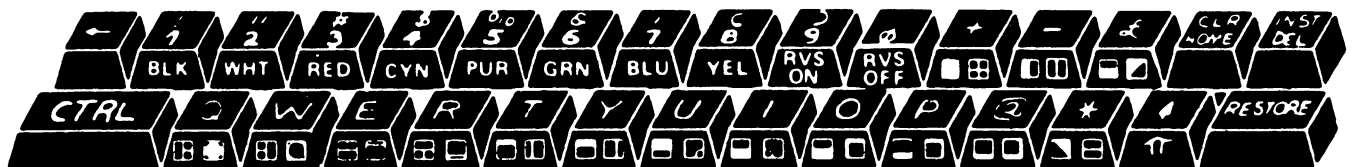
```
5 S=0:LI=3:POKE36879,8:PRINT"J"
10 SC=7680:CO=30720:CL=38400:AS=7680
15 DIMA(7).D(7)
16 V=11:X=10:D=1:SX=0:SY=0
20 A=0
25 FORI=0TO7:A(I)=7680+INT(RND(1)*506):D(I)=INT(RND(1)*3+21):IFRND(1)>.5THEND(I)
=-D(I)
30 NEXT
35 POKECL+Y*22+X,3:POKESC+Y*22+X,107
36 IFAS>0THENPOKERS,32
40 AD=INT(RND(1)*3+21):IFRND(1)>.5THENAD=-AD
45 AS=INT(RND(1)*506)+7680
50 FORI=0TO7:K=PEEK(197):IFABS(SX)+ABS(SY)=0THENPOKE36877,0:GOTO55
51 POKE36878,2:POKE36877,235:GOTO55
55 D=D+(K=34)-(K=33):IFD<0THEND=D+4
60 IFD>3THEND=D-4
65 SX=SX+((D=1)-(D=3))*(K=36):SY=SY+((D=2)-(D=0))*(K=36)
70 IFSX<-1THENSX=-1
75 IFSX>1THENSX=1
80 IFSY<-1THENSY=-1
85 IFSY>1THENSY=1
90 POKEC+Y*22+X,32:X=X+SX:Y=Y+SY
95 IFK=15THENX=INT(RND(1)*22):Y=INT(RND(1)*23)
100 IFX<0THENX=21
105 IFX>21THENX=0
110 IFY<0THENY=22
115 IFY>22THENY=0
116 IFPEEK(SC+Y*22+X)<>32THEN1000
```



```

120 POKECL+Y*22+X,3:C=107:IFD=2THENC=114
125 IFD=3THENC=115
130 IFD=0THENC=113
135 POKE5C+Y*22+X,C
140 IFA(I)=0THEN200
141 IFA(I)=5C+Y*22+XTHEN1000
145 POKEA(I),32:A(I)=A(I)+D(I)
150 IFA(I)<7680THENA(I)=A(I)+506
155 IFA(I)>8185THENA(I)=A(I)-506
160 POKEA(I)+C0,2:POKEA(I),81
200 IFK<>32ORINT(I/2)*2=ITHEN260
201 POKE36878,12:FORX1=255TO230STEP-1:POKE36877,X1:NEXT
205 X1=X:Y1=Y:DX=(D=3)-(D=1):DY=(D=0)-(D=2):C=64:IFDY<>0THENC=93
210 X1=X1+DX:Y1=Y1+DY
215 POKECL+Y1*22+X1,5:IFPEEK(SC+Y1*22+X1)=32THEN240
216 POKE36878,15:POKE36877,130
220 POKE5C+Y1*22+X1,42
225 FORJ=0TO7:IFA(J)=5C+Y1*22+X1THENA=A-1:A(J)=0:S=S+20
230 NEXTJ
231 IF5C+Y1*22+X1=ASTHENS=S+100:AS=0
232 POKE36877,0
235 GOTO250
240 POKE5C+Y1*22+X1,C:IFX1<21ANDX1>0ANDY1<22ANDY1>0THEN210
250 X2=X:Y2=Y
251 X2=X2+DX:Y2=Y2+DY:POKE5C+Y2*22+X2,32
255 IFX2<>X1ORY2<>Y1THEN251
256 POKE36877,0
260 IFAS=0THEN300
265 POKEAS,32:IFRND(1)>.9THENAD=INT(RND(1)*3+21):IFRND(1)>.5THENAD=-AD
267 AS=AS+AD:IFPEEK(AS+AD*2)=81THENAD=-AD
270 IFAS<7680THENAS=AS+506
275 IFAS>8185THENAS=AS-506
280 POKEAS+C0,7:POKEAS,88
285 IFA5=5C+Y*22+XTHEN1000
300 NEXTI:IFA=0THEN20
305 IFA3=0ANDRND(1)>.9THEN40
310 GOTO50
1000 PRINT"SCORE"S
1005 FORI=1TO2000:NEXT:I.I=I-1:IFI>0THENPRINT"J":GOTO16
1010 POKE198,0
9999 END

```



# Gunfight

Outshoot the fastest draw in town, VIC. Move up and down the screen, avoiding the VIC's shots and fire back.

Z moves your cowboy up,

C moves him down, and

M fires your revolver

Good shooting, pardner.

```
5 D$="XXXXXXXXXXXXXXXXXXXXXXXXXXXX":A$="XXXXXXXXXXXXXXXXXXXXXXXXXXXX"
10 POKE36879,136:PRINT"D"
15 CO=30720:SP=0:SC=0
20 BP=0:BC=0:P=4:C=12
25 FORI=7689TO8185STEP22:POKEI+CO,5:POKEI+1+CO,5:POKEI+2+CO,5
30 POKEI,160:POKEI+1,160:POKEI+2,160:NEXT
50 K=PEEK(197):IFK=64THEN100
55 P=P+(K=33)-(K=34):IFP<2THENP=2
60 IFP>16THENP=16
65 PRINTLEFT$(D$,P-1)"  XXXX  a? XXXXX  a? XXXXX: a? ";
70 PRINT"XXXXXXXX 700. 8. XXXXXX 8? 15 XXXXX  "
100 IFRND(1)>.3THENC=C+INT(RND(1)*3-1):GOTO110
105 IFRND(1)>.6THENC=C+(C>P)-(C<P)
110 IFC<2THENC=2
115 IFC>16THENC=16
120 PRINTLEFT$(D$,C-1);LEFT$(A$,17)"  XXXXX  a? XXXXXXX  a? XXXXX: a? ";
125 PRINT"XXXXXXXX 700. 8. XXXXXX 8? 15 XXXXX  "
130 IFK<>36THEN200
135 PRINTLEFT$(D$,P)"  a? 5 XXXXX  a? 5: a? XXXXXX: a? ";
140 PRINT"XXXXXXXX 700. 8. XXXXXX 8? 15 XXXXX  "
154 POKE36878,14:POKE36877,135:FORI=1TO75:NEXT
155 I=4:K=64
160 PE=PEEK(7680+P*22+I)
165 PRINTLEFT$(D$,P+1);LEFT$(A$,I)"  . ."
170 FORJ=1TO10:NEXT
175 PRINTLEFT$(D$,P+1);LEFT$(A$,I)"  "
180 I=I+1
181 IFI>10THENPOKE36877,0
182 IFI>6ANDI<11THENPOKE36877,200:POKE36878,5
185 IFI<22ANDPE=32THEN160
190 IFPE=32THEN200
195 POKE36877,250:FORJ=1TO50:NEXT:POKE36877,0
197 IF(P=CORP+1=C)ANDI>16THEN400
200 IFRND(1)<.95AND(RND(1)<.8ORABS(C-P)>1)THEN50
205 I=16
210 PRINTLEFT$(D$,C);LEFT$(A$,18)"  . a? XXXXXX: 700. 8. ";
215 PRINT"XXXXXXXX 700. 8. XXXXXX 8? 15 XXXXX  "
216 POKE36878,12:POKE36877,135:FORJ=1TO75:NEXT
220 PE=PEEK(7680+C*22+I)
225 PRINTLEFT$(D$,C+1);LEFT$(A$,I)"  . ."
230 FORJ=1TO10:NEXT
235 PRINTLEFT$(D$,C+1);LEFT$(A$,I)"  "

```

```

240 I=I-1
241 IF I < 12 AND I > 7 THEN POKE 36877, 200 : POKE 36878, 5
242 IF I < 8 THEN POKE 36877, 0
245 IF I > 0 AND PE = 32 THEN 220
250 IF PE = 32 THEN 50
252 POKE 36877, 250 : FOR J = 1 TO 50 : NEXT : POKE 36877, 0
253 IF (C <> P AND C + 1 <> P) OR I > 4 THEN 120
255 SC = SC + 1
300 PRINT LEFT$(D$, C) "          X          X          X          .     ";
305 PRINT "XXXXXXXXXX .     .     "
310 F = 1
315 GOTO 1000
400 PRINT LEFT$(D$, C); LEFT$(A$, 17) "          X          X          X          .     ";
405 PRINT "XXXXXXXXXX .     .     "
410 F = 2 : SP = SP + 1
1000 POKE 36878, 15 : POKE 36876, 200 : FOR I = 255 TO 130 STEP -1.3 : POKE 36877, I : NEXT I
1001 POKE 36877, 0 : POKE 36876, 0 : FOR I = 1 TO 500 : NEXT
1003 POKE 36878, 12 : POKE 36876, 140 : FOR I = 1 TO 450 : NEXT : POKE 36876, 0 : FOR I = 1 TO 100 : NEXT
1004 POKE 36876, 152 : FOR I = 1 TO 430 : NEXT : POKE 36876, 0 : FOR I = 1 TO 150 : NEXT
1005 POKE 36876, 140 : FOR I = 1 TO 150 : NEXT : POKE 36876, 0 : FOR I = 1 TO 75 : NEXT
1006 POKE 36876, 141 : FOR I = 1 TO 700 : NEXT
1007 POKE 36876, 0
1008 IF SP = 5 OR SC = 5 THEN 1020
1009 IF SP = 5 OR SC = 5 THEN 1020
1010 IFF = 1 THEN 120
1015 IFF = 2 THEN 65
1020 PRINT "XXXXXXXXX COMPUTER" SC
1025 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXX YOU" SP
1030 POKE 198, 0
1035 END

```





```

201 POKESC+Y#22+X,32:GETA$:IFB=0THENPOKE36876,0
205 X=X+1+(A$="A")*2-(A$="D"):IFX<0THENX=0
210 IFX>21THENX=0:LA=LA+1:GOTO15
220 Y=Y+(A$="W")-(A$="X"):IFY<0THENY=0
221 IFY>22THENY=22
225 IFPEEK(SC+Y#22+X)<>32THEN1000
230 POKECL+Y#22+X,2:POKESC+Y#22+X,62
235 IFFX(I)=0THEN250
240 POKEFX(I),32:FX(I)=FX(I)-1:IFFX(I)<7680THENFX(I)=FX(I)+88
245 POKECO+FX(I),1:POKEFX(I),60
250 IFM(I)=0THEN300
255 IFM(I)=B(I)ANDRND(1)<.90RB(I)=0THEN300
260 POKEM(I),32:M(I)=M(I)-22
265 IFM(I)<7702THENPOKEM(I),32:M(I)=B(I):POKEM(I)+CO,3:POKEM(I),30:GOTO300
270 POKEM(I)+CO,2:POKEM(I)-22+CO,3:POKEM(I),22:POKEM(I)-22,30
300 IFA$="S"ANDB=0THENB=SC+Y#22+X+22
355 IFB=0THEN400
356 POKF36878,5:POKE36876,B/25-75
360 POKEB,32:B=B+22,5:IFPEEK(B)<>32THEN365
361 IFPEEK(B+1)=32THEN395
363 B=B+1
365 POKE36878,15:POKE36877,175
366 P=PEEK(B):C=PEEK(B+CO):POKEB+CO,2:POKEB,42:B=INT(B):IFP<>60THEN375
370 FORJ=0TO3:IFFX(J)=BTHENFX(J)=0:P=32:S=S+20:FI=FI-1
371 NEXT:GOTO390
375 IFP<>30THEN385
380 FORJ=0TO3:IFB=M(J)-22THENPOKEM(J),32:M(J)=B(J):P=32:S=S+10
381 NEXTJ
385 IFP<>120THEN388
386 FORJ=0TO3:IFB=B(J)+22THENPOKEM(J),32:POKEM(J)-22,32:B(J)=0:S=S+30
387 NEXTJ
388 IFP=1010RP=770RP=780RP=100THENP=32:FL=FL-1
389 IFP>72ANDP<760RP=85THENS=S+50:P=32
390 IFP=81THENS=S+100:P=32
391 IFP=88THENS=S+500:POKE36879,25:FORJ=1TO100:NEXT:POKE36879,8:P=P+128
392 FORJ=1TO100:NEXT:POKEB,P:POKEB+CO,C:B=0:POKE36877,0:GOTO400
395 IFB>8185THENB=0:GOTO400
396 POKEB+CO,1:POKEB,46
400 IFA$<>" "THEN460
401 POKE36878,15:FORX1=255TO230STEP-1:POKE36877,X1:NEXT
405 X1=INT(X)+1
410 POKECL+Y#22+X1,7:IFPEEK(SC+Y#22+X1)=32THEN440
411 POKE36877,135:POKE36874,205
415 P=PEEK(SC+Y#22+X1):POKESC+Y#22+X1,42
416 IFP=1010RP=770RP=780RP=100THENFL=FL-1:P=32
417 IFP>72ANDP<760RP=85THENS=S+50:P=32
418 IFP=81THENS=S+100:P=32
420 FORJ=0TO3:IFFX(J)=SC+Y#22+X1THENFX(J)=0:S=S+20:FI=FI-1:P=32
425 IFB(J)+22=SC+Y#22+X1THENPOKEM(J),32:POKEM(J)-22,32:B(J)=0:S=S+30:P=32
430 IFM(J)-22=SC+Y#22+X1THENPOKEM(J),32:M(J)=B(J):S=S+10:P=32
435 NEXTJ
436 POKESC+Y#22+X1,P:X1=X1-1:GOTO445
440 POKESC+Y#22+X1,64:X1=X1+1:IFX1<22THEN410

```

```

441 X1=22
445 POKE36874,0:FORJ=X+1TOX1:POKESC+Y*22+J,32:NEXT:POKE36877,0
455 F=7680+INT(RND(1)*330):IFPEEK(F)>32ANDPEEK(F)>32THEN500
460 NEXTI:IFFL=0THEN500
465 F=7680+INT(RND(1)*330):IFPEEK(F)>32ANDPEEK(F)>62THEN500
485 POKEF+CO,4:POKEF,42:FORI=1TO75:NEXT:IFF=SC+Y*22+XTHEN1000
490 POKEF,32
495 POKEF+CO,4:POKEF,42:FORJ=1TO75:NEXT:IFF=SC+Y*22+XTHEN1000
496 POKEF,32
500 IFFI>0THEN200
505 FORI=0TO3:F%(I)=7767+I*44:IFI=1THENF%(I)=F%(I)-1
510 IFI=2THENF%(I)=F%(I)-47
515 IFI=3THENF%(I)=F%(I)-44
520 NEXTI:FI=4:GOTO200
1000 POKE650,0:POKE36876,129:POKE36877,180:POKE36878,15
1005 POKECL+Y*22+X,2:POKESC+Y*22+X,42
1010 FORI=1TO750:NEXT
1015 PRINT"SCORE"S:POKE36874,0:POKE36876,0:POKE36877,0:POKE36878,0
2000 DATA7902,7972,8090,8161
2005 DATA7992,7976,8023,7917
2010 DATA8036,8107,8110,7913

```

# Alien Maurauders

Stop the maurauding aliens before they overrun your planet. You start out with three lives, how long can you last?

Z moves you left

C for right

and M to fire your laser cannon.

Good luck!

```

1 HS=0
5 SC=0:B=1:F=0:IN=0:GOSUB1000:GOTO35
8 FORI=1TO2000:NEXT:IN=IN+1:GOSUB1005
35 IFF=1THEN505
36 POKE36878,10:POKE36874,132
37 FORJ=0TO2
40 K=PEEK(197)
45 IFK>32ANDK<35THENGOSUB300
50 IFS<0THENGOSUB400:GOTO100
70 IFK=36THENS=0-22:GOSUB400
100 GOSUB600
200 NEXTJ:POKE36874,0:FORY=0TO3:FORX=0TO3:IFAX(Y,X)=0THEN250
205 Z=AX(Y,X)-7680:Z1=INT(Z/22):Z=Z-Z1*22
210 POKEAX(Y,X),32:POKEAX(Y,X)+1,32
211 IFZ-XX*4<1ORZ-XX*4>6THENDX(Y,X)=-DX(Y,X):AX(Y,X)=AX(Y,X)+44
215 AX(Y,X)=AX(Y,X)+DX(Y,X)
217 POKEAX(Y,X)+CO,Y+2:POKEAX(Y,X),255
220 POKEAX(Y,X)+CO+1,Y+2:POKEAX(Y,X)+1,127
221 IFAK(Y,X)>8142THEN500

```

```

225 K=PEEK(197):IFK>32ANDK<35THENGOSUB300
226 IFK=36ANDS=0THENS=G-22
230 IFSC>0THENGOSUB400
235 C=C+1
250 NEXTX,Y:IFC=0THENS
251 C=0:FORX=0TO3:C=C+AX(PO,X):NEXTX:IFC=0THENPO=PO-1:IFPO<0THENS
255 GOTO35
300 POKEG-1,32:POKEG+1,32
305 G=G+(K=33)-(K=34):IFG<8143THENG=8143
310 IFG>8162THENG=8162
315 POKEG-1+CO,3:POKEG-1,112:POKEG+CO,3:POKEG,113:POKEG+CO+1,3:POKEG+1,110
320 RETURN
400 POKES,32:S=S-22:IFSC<7680THENS=0:POKE36877,0:RETURN
401 POKE36877,153:POKE36878,6
405 IFPEEK(S)>32THEN415
410 POKES+CO,5:POKES,93:GOTO465
415 POKE36877,175:POKE36878,15
416 P=PEEK(S):POKES+CO,2:POKES,42:IFP=160ORP=95ORP=105THEN460
420 POKES-1,32:POKES+1,32
421 POKE36878,15:POKE36877,200
425 IFP=127ORP=255THEN450
430 FORX1=0TO2:IFB=S%(X1)THENS=C+S%(X1)=0
435 NEXTX1
440 GOTO460
450 FORY1=0TO3:FORX1=0TO3:IFAX(Y1,X1)=SORAX(Y1,X1)+1=STHENAX(Y1,X1)=0:SC=SC+10*(
IN+1)
455 NEXTX1,Y1
460 POKES,32:S=0:POKE36877,0:POKE36878,0:POKE36877,0
465 RETURN
500 FORI=1TO1000:NEXT
501 PRINT"J":POKE36878,42:PRINT"###THE INVADERS LAND##":GOTO509
505 POKE36878,15:POKE36877,150:POKEG-1+CO,4:POKEG+CO,4:POKEG+1+CO,4
506 POKEG-1,223:POKEG,223:POKEG+1,223:FORI=1TO1000:NEXT:POKE36877,0:POKE36878,0
507 B=B+1:IFB<4THENPOKE7680,B+48:F=0:POKE36877,0:GOTO35
508 FORI=1TO1000:NEXT:PRINT:PRINT"YOU'RE DEAD"
509 PRINT:PRINT:PRINT"YOU SCORED"SC:POKE36877,0:POKE36878,0
510 IFSC>HSTHENHS=SC
511 PRINT"HIGH SCORE="HS
513 PRINT"PRESS A KEY FOR ANOTHER GAME,SPACE TO END"
514 GETA$:IFA$<>" "THEN514
515 GETA$:IFA$=" "THEN515
520 IFA$=" "THENEND
525 SC=0:B=1:F=0:IN=-1:PRINT"J":GOTO8
600 IFS%(J)>0THEN615
605 SS=INT(RND(1)*4):IFA%(PO,SS)=0THEN635
610 S%(J)=A%(PO,SS)+22
615 POKES%(J),32:S%(J)=S%(J)+22:IFS%(J)>8163THENS%(J)=0:GOTO635
620 IFPEEK(S%(J))=112ORPEEK(S%(J))=113ORPEEK(S%(J))=110THENF=1
625 IFPEEK(S%(J))>32THENPOKES%(J),32:S%(J)=0
630 POKES%(J)+CO,6:POKES%(J),93
635 POKE36877,0:RETURN
1000 PRINT"J":CO=30720:DIMAX(3,3),DX(3,3):G=8144:POKE36879,8
1001 DIMS%(2)

```

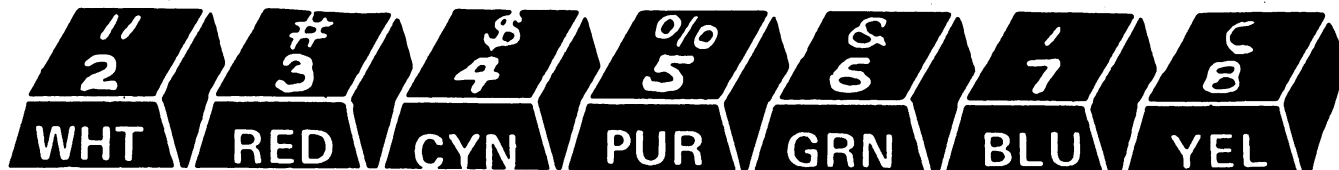




```

105 V=V-.5-U/20+(HC4)*2-AB*3:IFRND(1)>.95THENP=P+INT(RND(1)*3-1)
110 IFV<0THENV=0
115 GETA$:A=A-(A$="W")+(A$="X")
120 IFA$=CHR$(13)THENU=0:AB=0
121 IFA$=" "THENAB=1
125 IFAC<-1THENA=-1
130 IFA>1THENA=1
135 V=V+TH:IFVAL(A$)>0ORAS$="0"THENTH=VAL(A$)
140 P=P+(A$="A")-(A$="D")
145 IFP<-1THENP=-1
150 IFP>1THENP=1
151 IFA$="S"THENU=1
155 PRINT"#####";INT(V);"|||"
160 PRINT"#####";INT(H);"|||"
165 PRINT"#####";INT(D);"|||"
170 PRINT"#####";:IFA=1THENPRINT"\";
175 IFA=0THENPRINT"-";
180 IFA=-1THENPRINT"/";
185 PRINT"#####";
190 PRINT"#####";:IFU=0THENPRINT"UP "
195 IFU=1THENPRINT"DOWN"
205 PRINT"#####";
210 PRINT"#####";
215 IFP=1THENPRINT"\###"
220 IFP=0THENPRINT"###"
225 IFP=-1THENPRINT"###/"
235 IFHC<1THENH=0
240 IFD>0ANDH=0THEN250
241 IFY=0ANDH=0THEN250
245 IFD>-200THEN100
250 S=100:FORI=1TO3000:NEXT:PRINT"J"
255 IFD>0THENPRINT"YOU MISSED THE RUNWAY":S=S-80:GOTO300
260 IFD<-500THENPRINT"YOU OVER SHOT THE RUNWAY":S=S-60:GOTO300
265 IFP<0THENPRINT"YOUR WING SCRAPED THE GROUND":S=S-50:GOTO300
270 IFAC<1THENPRINT"YOU BELLY FLOPPED":S=S-50:GOTO300
275 IFP<0ANDHC<4THENPRINT"YOUR WING TIP HIT THE GROUND":S=S-75:GOTO300
280 IFU=0THENPRINT"YOUR UNDERCARRIAGE WASUP":S=S-75:GOTO300
285 IFV>10THENPRINT"TOO FAST":S=S-25:IFV>25THENS=S-25
290 IFS=100THENPRINT"A PERFECT LANDING"
300 PRINT"YOU SCORED"
305 POKE650,0:END
1000 FORI=1TO13
1005 POKE7845+I*22+I/1.7,108:POKE7845+I*22-I/1.7,123
1010 IFINT(I/2)*2=ITHENPOKE7845+I*22,101
1015 NEXT

```



# Marathon

Sit back in your armchair at home and bet on the greatest athletes the world has ever seen.

Place your money on one of the three athletes and watch the race. Then, if you are lucky, collect your winnings.

The game continues until you are broke or you break the bank.

Can you choose the winner from the odds given?

```
2 POKE36879.8
3 MO=100
10 PRINT"#####ATHLETE GAMBLER:#####"
20 PRINT"      _____"
30 PRINT"WHAT IS YOUR NAME"
31 INPUTA$
32 FORI=1TO3:OD(I)=INT(RND(1)*6)+1:NEXT
35 PRINT"YOU HAVE £"MO
36 PRINTA$
40 PRINT:PRINT"RUNNER:      ODDS:"
50 PRINT"#####"
60 PRINT:PRINT"1)SEB.      COE      "OD(1)"/1"
70 PRINT:PRINT"2)STEVE    OVET     "OD(2)"/1"
80 PRINT:PRINT"3)ALLAN    WELLS   "OD(3)"/1"
90 PRINT:PRINT"BET?"
100 INPUTB
110 IFB>MOORB<0THEN100
120 PRINT:PRINT"WHAT'S THE NUMBER OF THE ATHLETE?"
130 INPUTR
135 IFR<1ORR>3THEN130
200 PRINT"J":POKE36879,170
210 FORI=1TO22
220 FORJ=7680+I#22TO7689+I#22-INT(I/2.2):POKEJ+30720,0:POKEJ,81:NEXTJ,I
225 FORI=1TO22
230 FORJ=7701+(I#22)TO7692+(I#22)+INT(I/2.2)STEP-1:POKEJ+30720,0:POKEJ,81:NEXTJ,
I
235 PRINT"#####THE RACE###"
240 PRINT"#####"
250 PRINT"#####|"
300 :POKE36874,128:POKE36877,128:FORI=15TO1STEP-1:POKE36878,I:FORJ=1TO20:NEXTJ,I
310 POKE36877,0:POKE36874,0:POKE36878,0
330 RP(1)=8122:RP(2)=8130:RP(3)=8137
340 FORI=1TO3:POKERP(I),32:POKERP(I)+1,32
350 POKERP(I)+2,32:POKERP(I)+23,32
360 POKERP(I)+44,32:POKERP(I)+46,32
370 POKERP(I)-21,32:NEXTI
390 FORI=1TO3
400 IF(RND(1)<.24ANDRND(1)*5<OD(I))ANDRND(1)<.43THEN410
402 IFI=1THENRP(1)=RP(1)+.5
403 IFI=3THENRP(3)=RP(3)-.5
404 RP(I)=RP(I)-22
410 NEXTI
```



```
415 FORI=1TO3:IFRP(I)<7897THEN1000
450 NEXT
540 FORI=1TO3:POKERP(I)+30720,1:POKERP(I),252:POKERP(I)+30721,0:POKERP(I)+1,176+
I
550 POKERP(I)+30722,1:POKERP(I)+2,254:POKERP(I)+30743,0:POKERP(I)+23,160
560 POKERP(I)+30764,1:POKERP(I)+44,254:POKERP(I)+30766,1:POKERP(I)+46,252
570 POKERP(I)+30700,1:POKERP(I)-21,81:NEXTI
580 :POKE36878,4:POKE36874,147:POKE36877,140:FORI=1TO65:NEXT:POKE36874,0:POKE368
77,0
581 POKE36878,0:GOTO340
1000 FORZ=1TO1000:NEXTZ:POKE36879,8
1001 J=I
1010 PRINT"J="
1020 GOSUB1500
1050 PRINT"WON."
1060 PRINT:PRINT"YOU BET ON"
1070 I=R
1080 GOSUB1500
1090 PRINT"SO, YOU'VE"
1100 IFJ=RTHENPRINT"WON!!! WELL DONE."
1110 IFJ<RTHENPRINT"LOST!! BAD LUCK."
1111 IFJ<RTHENMO=MO-B
1112 IFJ=RTHENMO=MO+(OD(R)*B)
1113 IFMO<1THEN2000
1114 IFMO>20000THEN3000
1120 PRINT:PRINT:PRINT"PRESS RETURN"
1130 INPUTA$
1140 GOTO32
1500 IFI=1THENPRINT"SEBASTIAN COE"
1510 IFI=2THENPRINT"STEVE OVET"
1520 IFI=3THENPRINT"ALLAN WELLS"
1550 RETURN
```

```

2000 PRINT"YOU'VE RAN OUT OF MONEY"
2040 PRINT:PRINT"DO YOU OR YOUR FRIEND WANT A GAME?"
2050 INPUTA$
2060 IFA$="YES"THENRUN
2070 PRINT"BYE THEN."
2080 END
3000 PRINT"YOU'VE BUST THE BANK!!"
3010 GOTO2040

```

# Wizard

Can you follow the series of electronic blips given by VIC?

Press the keys in right order after the computer has given you the tune. The tune gets longer as you go on.

Be quick, otherwise the computer will give you a raspberry.

```

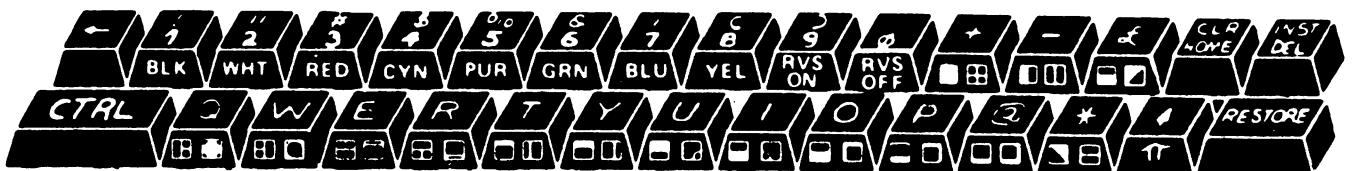
1 REM*COMPUTER WIZARD*
2 PRINT" ":POKE36879,158
3 CO=30720:LO=0
9 PRINT" "
10 PRINT" "
20 PRINT" "
30 PRINT" "
40 PRINT" "
45 PRINT" "
50 PRINT" "
55 PRINT" "
60 PRINT" "
65 PRINT" "
70 PRINT" "
75 PRINT" "
80 PRINT" "
85 PRINT" "
90 PRINT" "
95 PRINT" "
100 PRINT" "
110 PRINT" "
120 PRINT" "
130 PRINT" "
140 PRINT" "
150 PRINT" "
170 FORI=8142T08185:POKEI+CO,0:POKEI,160:NEXT
180 FORJ=1T06:READA(J):NEXTJ
185 DATA223,227,230
190 DATA231,234,236
195 FORJ=1T09:NO(J)=INT(RND(1)*6)+1:NEXT:NU=1

```

```

200 POKE36878,8:FORI=1TONU
210 POKE36875,A(NO(I))
211 Z=2
212 ONNO(I)GOSUB1000,1100,1200,1300,1400,1500
215 FORJ=1TO550:NEXTJ
220 POKE36875,0:Z=1:ONNO(I)GOSUB1000,1100,1200,1300,1400,1500:FORJ=1TO125:NEXTJ,
I
225 POKE198,0
230 FORI=1TONU
235 FORJ=1TO170
240 GETA$(I):IFA$(I)<>" THEN300
250 NEXTJ
260 POKE36875,128:FORJ=1TO1288:NEXT:POKE36875,0
270 LO=LO+1:IFLO=5THEN2000
280 GOTO195
300 IFVAL(A$(I))<NO(I)THEN260
305 POKE36875,A(VAL(A$(I)))
310 NEXTI
320 FORI=1TO560:NEXT:POKE36875,0
350 NU=NU+1
360 FORI=1TO850:NEXT
365 IFNU=10THEN195
370 GOTO200
1000 POKE7883+CO,Z:POKE7883,81
1010 RETURN
1100 POKE7889+CO,Z:POKE7889,81
1110 RETURN
1200 POKE7894+CO,Z:POKE7894,81
1210 RETURN
1300 POKE7971+CO,Z:POKE7971,81
1310 RETURN
1400 POKE7977+CO,Z:POKE7977,81
1410 RETURN
1500 POKE7982+CO,Z:POKE7982,81
1510 RETURN
2000 POKE36879,8:PRINT"JIM YOU WERE WRONG,FIVE TIMES"
2010 PRINT"-----"
2020 PRINT"DO YOU WANT ANOTHER GO (Y/N)?"
2030 GETA$:IFA$="" THEN2030
2040 IFA$="Y" THENRUN
2050 PRINT"BYE"
2060 END

```



# Tail Gunner

Enemy space-craft close in on you, growing larger as they approach. Move your sights over the top of them and fire before they escape past you.

W moves your sights up,

A moves them left,

D moves them right,

X moves your sights down, and

S fires your energy cannon.

How many can you destroy before 6 get through your defensive net.

```
5 POKE650,255
10 POKE36879,0:PRINT"#####"
15 DIMA(2),S(2):FORI=0TO2:A(I)=7680+INT(RND(1)*506)
20 S(I)=1:NEXT
25 SC=7680:CL=38400:CO=30720:X=10:Y=10
30 S=0:PA=0
50 FORI=0TO2
55 GETA$:IFA$=""THEN100
60 POKESC+Y*22+X,32:X=X+(A$="A")-(A$="D")
65 Y=Y+(A$="W")-(A$="X"):IFY<0THENY=0
70 IFY>22THENY=22
75 IFX<0THENX=0
80 IFX>21THENX=21
85 POKECL+Y*22+X,1:POKESC+Y*22+X,91
100 IFA(I)=0THEN100
105 A=A(I):POKEA,32:POKEA-1,32:POKEA+1,32:POKEA-21,32:POKEA-23,32
106 POKEA+21,32:POKEA+23,32
107 IFRND(1)>.9THENS(I)=S(I)+1
110 D=INT(RND(1)*3+21):IFRND(1)>.5THEND=-D
115 A=A+D:IFAC7703THENA=A+450
120 IFA>8162THENA=A-450
125 A(I)=A:POKEA+CO,4:POKEA+CO-1,4:POKEA+CO+1,4:POKEA+CO-21,4:POKEA+CO-23,4
130 POKEA+CO+23,4:POKEA+CO+21,4
135 ONS(I)GOTO140,145,150,160,170
140 POKEA,46:GOTO200
145 POKEA,87:GOTO200
150 POKEA,87:POKEA-1,107:POKEA+1,115:GOTO200
160 POKEA,87:POKEA-1,107:POKEA+1,115:POKEA-23,85:POKEA-21,73
165 POKEA+21,74:POKEA+23,75:GOTO200
170 A(I)=7680+INT(RND(1)*506):PA=PA+1:S(I)=1
175 IFFA>5THEN1000
176 GOTO200
180 IFRND(1)<.9THEN200
185 A(I)=INT(RND(1)*506)+7680:S(I)=1
200 IFA$<"S"THEN300
201 POKE36878,10:FORA=255TO200STEP-1:POKE36877,A:NEXT:FORA=1TO100:NEXT:POKE36877
,130
202 POKE36878,15
205 A=CL+Y*22+X:POKEA,7:POKEA-1,7:POKEA+21,7:POKEA+22,7
```

```

210 POKEA-22,7:POKEA-23,7:POKEA-21,7:POKEA+23,7
215 A=SC+Y*22+X:FORJ=1T05
220 ONJGOTO225,230,235,240,250
225 POKEA,46:POKE36877,145:GOTO270
230 POKEA,81:POKE36877,175:GOTO270
235 POKEA,87:POKE36877,200:GOTO270
240 POKEA,73:POKEA-1,85:POKEA+21,74:POKEA+22,75
245 POKE36879,25:POKE36877,225:GOTO270
250 POKEA,32:POKEA-23,85:POKEA-22,64:POKEA-21,73:POKE36877,250
255 POKEA-1,93:POKEA+1,93
260 POKEA+21,74:POKEA+22,64:POKEA+23,75
265 POKE36879,42
270 FORK=1T025+J*10:NEXTK,J:POKE36877,0
275 POKE36879,8:POKECL+Y*22+X,1:POKESC+Y*22+X,91
280 POKEA-23,32:POKEA-22,32:POKEA-21,32:POKEA-1,32:POKEA+1,32
285 POKEA+21,32:POKEA+22,32:POKEA+23,32
290 FORJ=0T02:IFAC>A(J)ANDR-1<A(J)ANDR+21<A(J)ANDR+22<A(J)THEN295
291 S=S+S(J)*10
292 POKEA(J)-1,32:POKEA(J)-21,32:POKEA(J)-22,32:POKEA(J)-23,32
293 POKEA(J)+1,32:POKEA(J)+21,32:POKEA(J)+22,32:POKEA(J)+23,32
294 A(J)=0
295 NEXT
300 NEXTI:GOTO50
1000 POKE650,0
1005 FORI=1T01000:NEXT:PRINT"XXXXXXXXXXXXXXXXXX YOU'RE DEAD"
1010 PRINT"XXXXXXXXX SCORE"S
1015 FORI=36874T036878:POKEI,0:NEXT

```





# Astro Wars

In this arcade action type program, you must stop the enemy space craft from reaching the bottom of the screen. If you manage to stop the first wave, it is followed by a second and then a third wave. How many aliens can you take with you before your inevitable defeat?

Z moves you left,  
C moves you right, and  
M fires your laser.

```
10 POKE36879,8:PRINT"J";:CO=30720
15 S=0:P=8174:W=0:L=1
20 DIMA(3)
24 PRINTTAB(10);:FORI=1TO4-L:PRINT"#+ ";:NEXT
25 FORI=0TO3:A(I)=7702+INT(RND(1)*22):IFI<3THENS(I)=0
30 NEXTI
35 C1=107:C2=81:C3=115:N=4
36 W=W+1:IFW>3THENW=1
40 IFW=2THENC1=95:C2=98:C3=105
45 IFW=3THENC1=32:C2=88:C3=32
50 FORI=0TO2STEP2:K=PEEK(197):IFK=64THEN100
55 POKEP-1,32:POKEP+1,32:P=P+(K=33)-(K=34)
60 IFP<8165THENP=8165
65 IFP>8184THENP=8184
70 POKEP-1+CO,3:POKEP+CO,3:POKEP+1+CO,3
75 POKEP-1,112:POKEP,113:POKEP+1,110
100 FORJ=ITOI+1:IFA(J)=0THEN150
105 POKEA(J)-1,32:POKEA(J),32:POKEA(J)+1,32
110 A(J)=A(J)+INT(RND(1)*3+21)
115 IFA(J)>8163THEN1000
120 POKEA(J)-1+CO,5:POKEA(J)+CO,1:POKEA(J)+1+CO,5
125 IFW=2THENPOKEA(J)-1+CO,7:POKEA(J)+CO,2:POKEA(J)+1+CO,7
130 IFW=3THENPOKEA(J)+CO,2
135 POKEA(J)-1,C1:POKEA(J),C2:POKEA(J)+1,C3
150 NEXTJ
155 IFK<>36THEN200
156 POKE36878,12:FORX=255TO200STEP-1:POKE36877,X:NEXT
160 FORX=P-22TO7702STEP-22:POKEX+CO,7:IFPEEK(X)=32THEN190
161 POKE36878,15:POKE36877,130
165 POKE36879,40:POKEX-23+CO,1:POKEX-21+CO,1:POKEX+23+CO,1:POKEX+21+CO,1
166 POKE36877,200
170 POKEX-23,127:POKEX-21,255:POKEX,81:POKEX+23,127:POKEX+21,255
175 FORY=0TO3:IFA(Y)=XTHENPOKEX-1,32:POKEX+1,32:S=S+10*W:A(Y)=0:N=N-1
180 IFA(Y)<>X+1AND(A(Y)<>X-1)THEN185
181 POKEX-1,32:POKEX-2,32:POKEX+1,32:POKEX+2,32:A(Y)=0:S=S+5*W:N=N-1
185 NEXTY:POKEX-23,32:POKEX-21,32:POKEX+23,32:POKEX+21,32:POKE36879,8
186 POKE36877,230
190 POKEX,93:NEXTX:FORX=P-22TO7702STEP-22:POKEX,32:NEXT
195 POKE36877,0
200 NEXTI:PRINT"###SCORE"S:IFN>0THEN50
205 GOTO25
1000 FORI=1TO1000:NEXT:L=L+1:IFL<4THENW=0:PRINT"J";:GOTO24
```

# Swarm

Flash through the skies and zap the alien space craft before they get you. As they collide with you, your ship slows down until it eventually stops and the game ends.

As the aliens die, hear the whine of reinforcements warping into the battle zone to take their place.

W moves you space ship up,  
A reverses it,  
D makes it go to the right, and  
X moves it down,  
S will fire your laser at the enemy.

```
5 POKE650,255
10 PRINT"J":POKE36879,8:FORI=3164TO8185:POKEI+30720,5:POKEI,104:NEXT
15 X=5:Y=10:D=1:S=0:SC=7680:CL=38400:R=1
20 DIMX(5),Y(5):FORI=0TO5:X(I)=99:NEXT
50 FORI=0TO5:GETA$:IFA$=""ANDD=0THENPOKE36877,0:GOTO100
51 POKE36878,2:POKE36877,240
55 POKESC+Y#22+X,32:X=X+D/R
60 D=D+(A$="A")-(A$="D"):IFD>1THEND=1
65 IFD<-1THEND=-1
70 Y=Y+(A$="W")-(A$="X")
75 IFX<0THENX=21
80 IFY<0THENY=0
85 IFX>21THENX=0
90 IFY>21THENY=21
95 POKECL+Y#22+X,3:C=107:IFD=-1THENC=115
96 IFPEEK(SC+Y#22+X)=32THEN99
97 R=R+1:POKE36876,250:FORL=1TO200:NEXT:POKE36876,0:
98 POKECL+Y#22+X,2:IFR>3THEN1000
99 POKESC+Y#22+X,C
100 IFA$(C)"S"THEN200
101 POKE36878,9:FORD1=255TO230STEP-1:POKE36877,D1:NEXT
105 D1=D:IFD1=0THEND1=1
110 X1=INT(X)
115 X1=X1+D1:POKECL+Y#22+X1,7:P=PEEK(SC+Y#22+X1):IFP=32THEN150
120 FORJ=0TO5:IFY=Y(J)ANDX1=X(J)THENX(J)=99:S=S+10
125 NEXTJ
130 POKE36878,15:POKE36877,130
145 GOTO155
150 POKESC+Y#22+X1,64:IFX1<21ANDX1>0THEN115
155 FORX2=INT(X)+D1TOX1STEPD1:POKESC+Y#22+X2,32:NEXT
160 POKE36877,0
200 IFX(I)=99THEN250
205 POKESC+Y(I)#22+X(I),32:IFRND(1)<.4THEN225
210 Y(I)=Y(I)+(Y(I)>Y)-(Y(I)<Y)
215 X(I)=X(I)+(X(I)>X)-(X(I)<X)
220 GOTO246
225 X(I)=X(I)+INT(RND(1)*3-1):Y(I)=Y(I)+INT(RND(1)*3-1)
230 IFX(I)<0THENX(I)=21
235 IFY(I)<0THENY(I)=0
```

```

240 IFX(I)>21THENX(I)=0
245 IFY(I)>21THENY(I)=21
246 IFY(I)=YANDX(I)=INT(X+.5)THENR=R+1:POKECL+Y*22+X,2:IFR>3THEN1000
247 POKECL+Y(I)*22+X(I),4:POKESC+Y(I)*22+X(I),88
250 IFX(I)<99ORRND(1)<.9THEN255
251 X(I)=INT(RND(1)*22):Y(I)=INT(RND(1)*21)
252 POKE36878,15:FORL=250TO150STEP-1:POKE36876,L:NEXT:POKE36876,0
255 NEXTI:GOTO50
1000 POKE650,0:POKE36878,0:POKE36877,0
1005 FORI=1TO1000:NEXT:PRINT"#####DISCORE"S

```

## 3-D Maze

Work your way throughout the maze in the quickest time possible. You must try and reach cell number 25.

The corridor is depicted in 3-D graphics.

Cursor-right rotates you right, cursor-left rotates you left.

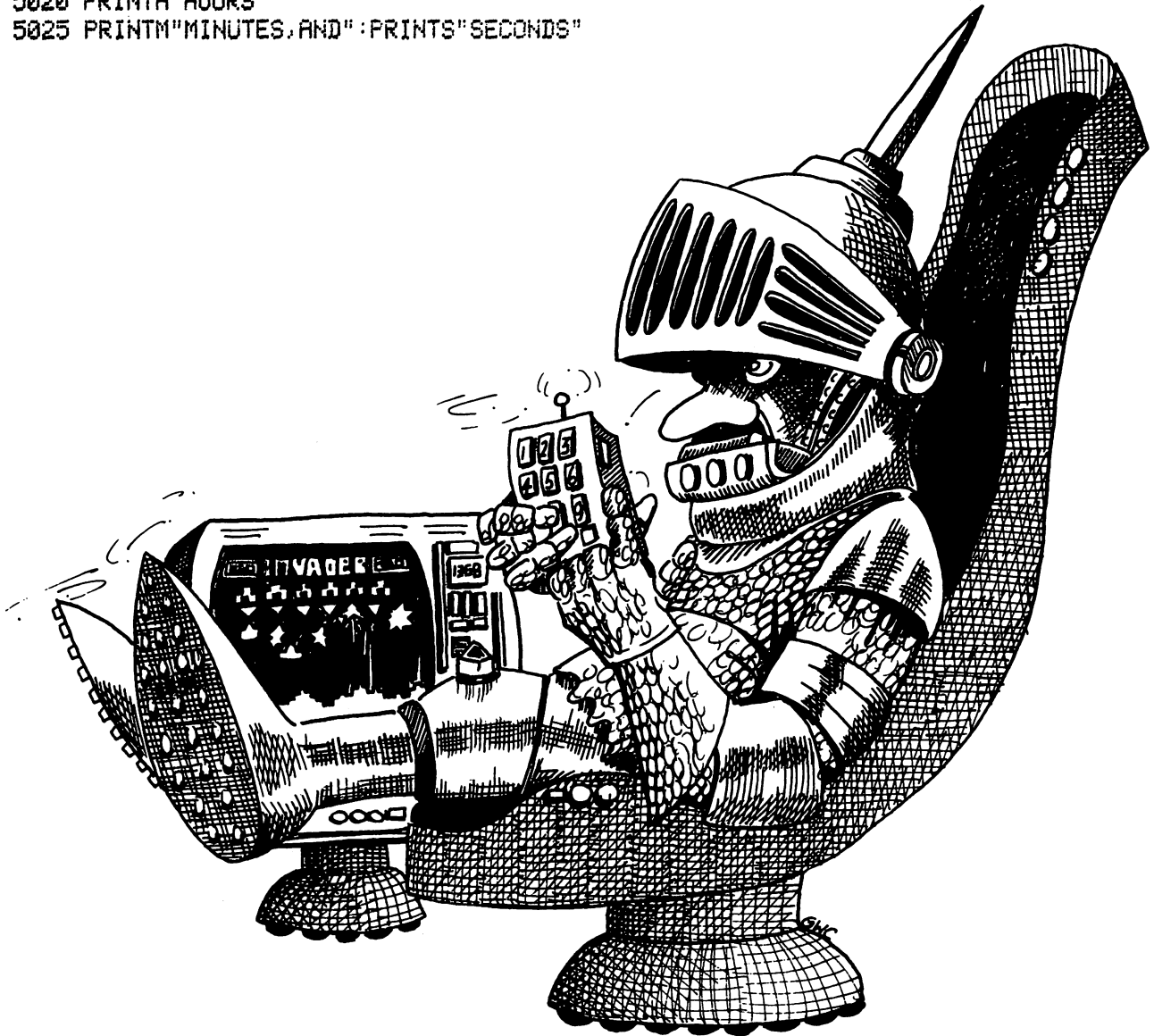
'Return' moves you forwards, if there is a gap in the wall in front of you. Under a minute is a good time.

```

10 POKE36879,8
15 DIMM$(50,4):FORI=1TO50
20 IFI>1THENM$(I,4)=M$(I-1,2):IFI>5THENM$(I,3)=M$(I-5,1)
25 M$(I,1)=STR$(INT(RND(1)*2)):M$(I,2)=STR$(INT(RND(1)*2))
30 IFI=1THENM$(I,3)="0":M$(I,4)="0"
40 NEXTI:TI$="000000"
45 P=INT(RND(1)*50+1):IFP=25THEN45
50 F=VAL(M$(P,1)):R=VAL(M$(P,2)):B=VAL(M$(P,3)):L=VAL(M$(P,4))
60 D=1
75 IFP=25THEN5000
80 GOSUB1000
85 GETA$:IFA$=""THEN85
90 IFA$<>"|"ANDA$<>"|"THEN150
95 IFA$="|"THEN120
100 EX=F:F=L:L=B:B=R:R=EX
105 D=D-1:IFD<1THEND=4
110 GOSUB1000:GOTO150
120 EX=F:F=R:R=B:B=L:L=EX
125 D=D+1:IFD>4THEND=1
130 GOSUB1000
150 IFA$<>CHR$(13)THEN85
160 IFF=0THEN85
165 P=P+((D=3)-(D=1))*5+(D=4)-(D=2)
170 IFP>50THENP=P-50
175 IFP<1THENP=P+50
180 GOTO50
1000 PRINT"#####";
1005 PRINT"#####";
1010 PRINT"#####";

```

```
1015 PRINT"#####/###/###/###/###/###/###/###/#####"  
1020 PRINT"#####";  
1025 IFF=0THENPRINT"#####"  
1030 IFL=0THEN1050  
1035 PRINT"#####"  
1040 PRINT"#####"  
1045 PRINT"#####"  
1050 IFR=0THEN1070  
1055 PRINT"#####";  
1060 PRINT"#####";  
1065 PRINT"#####"  
1070 PRINT"CELL"P:RETURN  
5000 FORI=1TO1000:NEXT:PRINT"#####WELL DONE"  
5005 PRINT"##### YOU GOT OUT ALIVE"  
5010 PRINT"TIME TAKEN";  
5015 T=VAL(TI$):H=INT(T/1000):M=INT((T-H*1000)/100):S=T-H*1000-M*100  
5020 PRINTH"HOURS"  
5025 PRINTM"MINUTES, AND":PRINTS"SECONDS"
```



# Brands Hatch

Test your skill on the road, trying to avoid thirty cars. Be careful not to crash into them or into the side barriers.

See if you can finish the race without damage to you or your car.

You are given a rating depending on your performance.

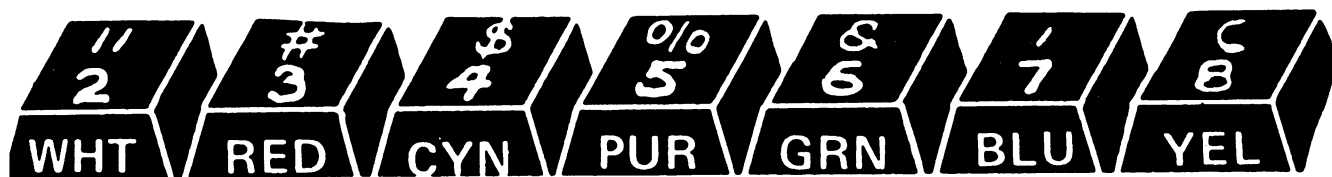
Race instructions are given in the program.

```
1 C=12:H=0:PRINT"DO YOU WANT":PRINT"INSTRUCTIONS":PRINT"(YES OR NO)?:INPUT
A$:
2 IF A$="Y" THEN GOSUB 2000
3 GOSUB 2090:POKE 36879,92:POKE 650,128:POKE 36878,15:POKE 36874,128:GOTO 7
4 PRINT" ":FOR I=1 TO 23
5 PRINT"    ■■■■■          ||"
6 NEXT I:RETURN
7 GOSUB 4
10 FOR L=1 TO 30
25 A=7+INT(RND(1)*7)
70 PRINT"XXXXXXXXXXXXXXXXXXXXXXXX":PRINT TAB(A)"   ■ ■ ■   "
80 PRINT TAB(A)"  ■ ■ ■ ■ ■  "
90 PRINT TAB(A)" ■ ■ ■ ■ ■ ■ ■ "
100 PRINT TAB(A)"   ■ ■ ■ ■ "
110 FOR Z=1 TO 8+DI
111 GET A$:PRINT"X":PRINT TAB(C) " "
120 PRINT TAB(C) " "
130 PRINT TAB(C) " "
140 PRINT TAB(C+1) " "
150 PRINT"XXXXXXXXXXXXXXXX"
170 C=C+(A$="Z")-(A$="M")
180 IF C<7 OR C>14 THEN GOSUB 1000
191 PRINT"X":PRINT TAB(C) " "
195 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    ■ ■ ■ ■          ||"
196 PRINT"X L; :PRINT"X H"
200 PRINT"X":PRINT TAB(C)"   ■ ■ ■   "
210 PRINT TAB(C)"  ■ ■ ■ ■ ■  "
220 PRINT TAB(C)" ■ ■ ■ ■ ■ ■ ■ "
230 PRINT TAB(C+1)" ■ ■ ■ ■ ■ "
240 GOSUB 300
250 NEXT Z,L
260 PRINT"XXXXXXXX"
262 IF H=0 THEN PRINT"***GREAT DRIVING!***":IF DI>2 THEN PRINT"   FOR THAT LEVEL"
264 IF H=1 THEN PRINT"***WELL DONE***"
265 IF H>1 AND H<5 THEN PRINT"***NOT BAD***"
266 IF H>4 AND H<11 THEN PRINT"***GRANNY***"
270 IF H>10 THEN PRINT"***HA, HA, HA!!***"
275 PRINT:
280 POKE 650,0
290 GOTO 500
300 PE=0:PE=PEEK(7812+C)+PEEK(7835+C)+PEEK(7814+C)
330 IF PE=96 THEN RETURN
400 POKE 36879,136:POKE 36877,240:FOR I=251 TO 180:POKE 36876,I
```

```

401 FORI1=1TO200:NEXTI1,I
402 PRINT"000":PRINTTAB(C)" ":PRINTTAB(C-1)" "
403 PRINTTAB(C-1)" "
407 PRINTTAB(C-1)" "
410 POKE36876,0:POKE36877,140:FORI=15TO0STEP-1:POKE36878,I:FORI1=1TO100:NEXTI1,I
430 POKE36877,0:POKE36878,15:POKE36874,128:POKE36879,92:GOSUB4:H=H+1:RETURN
500 POKE36874,0:FORI=1TO800:NEXTI:PRINT"000":PRINT"#####FINISH#"
510 FORI=1TO8
520 READA(I)
530 NEXTI
550 DATA223,227,230
560 DATA231,234,236
570 DATA238,239
580 FORI=0TO8STEP2:POKE36875,A(I):GOSUB700:NEXTI
590 FORI=1TO8STEP2:POKE36875,A(I):GOSUB700:NEXTI
600 FORI=8TO1STEP-1:POKE36875,A(I):GOSUB700:NEXTI:PRINT":":POKE36876,0:POKE3687
5,0
620 POKE650,0:POKE36874,0:POKE36879,27:END
700 FORI1=1TO350:NEXT:RETURN
1000 POKE36877,213:POKE36875,208:FORJ=1TO750:NEXTJ:POKE36875,0:POKE36877,0:H=H+1
1010 IFC<7THENC=7
1020 IFC>14THENC=14
1030 GOSUB4:RETURN
2000 PRINT":YOU MUST OVERTAKE 30 CARS,THE LOWER THE SKILL LEVEL THE FASTERYO
U GO."
2015 PRINT"-----"
2035 INPUT"PRESS RETURN";A$:PRINT":)"
2040 PRINT"-----":PRINT"Z-MOVES YOUR CAR LEFT,M-MOVES IT RIGHT,
"
2045 PRINT"-----"
2050 PRINT"THE FIGURE AT THE TOP LEFT IS THE NUMBER OF CARS YOU'VE PASSED,"
2060 PRINT"THE ONE TO THE RIGHT IS THE NUMBER OF CRASHES."
2070 PRINT"YOU CRASH IF YOUR FRONT ";
2075 PRINT"WHEEL HITS A CAR"
2080 PRINT"OR YOU HIT THE SIDE OF THE ROAD.":INPUT"PRESS RETURN";A$:PRINT":)":RET
URN
2090 PRINT"DIFICULTY? (1-HARD TO 9-EASY)
2100 INPUTDI:PRINT":)"
2110 IFDI<1ORDI>9THEN2100
2120 RETURN

```



# Lightning Bolt

A bolt of energy descends from the heavens. You must make a wall with your cursor and try and make the bolt go through it. If it hits your wall you gain points.

Be careful, if you cross your path or that of the bolt, you lose one of your 5 lives. Also, the bolt may fire a laser at you, knocking a hole through your wall and perhaps hitting you, losing one of your lives.

W moves your cursor up,  
A moves it left,  
D moves it right and X moves it down

```
5 HI=0
10 S=0:CO=30720:SP=3:LI=5:F=0
15 POKE36879,8:P=7910
20 PRINT"J":FORI=8164TO8185:POKEI+CO,5:POKEI,160:NEXT
25 L=7680+INT(RND(1)*22)
30 D=INT(RND(1)*3-1):IFD=0ORRND(1)>.5THEND=D+22
35 C=93:IFD=21THENC=78
40 IFD=23THENC=77
45 IFD<20THENC=64
50 POKEL+CO,3:POKEL,C
55 L=L+D:IFL>8163THENS=S-10:GOTO20
56 IFL<7680THENL=L+22
57 IFPEEK(L)=160THENS=S+50:GOTO30
60 POKEL+CO,7:POKEL,81
61 FORI=1TOSP
65 K=PEEK(197):IFK<17ANDK<18ANDK<9ANDK<26THEN100
70 POKEP+CO,4:POKEP,160:P=P+(K=17)-(K=18)+(K=9)-(K=26)*22
71 S=S+1
75 IFP>8164THENP=P-22:S=S-1
80 IFP<7680THENP=P+22:S=S+1
85 IFPEEK(P)=32THEN90
86 LI=LI-1:POKEP+CO,7:POKEP,42
87 POKE36876,240:POKE36878,10:FORL1=1TO100:NEXT:POKE36876,0
88 GOTO100
90 POKEP+CO,2:POKEP,91
100 NEXT
105 IFS>1000THENSF=2
110 IFS>5000THENSF=1
115 IFRND(1)<.95THEN200
116 POKE36878,12:FORE=255TO210STEP-1:POKE36877,E:NEXT
120 B=L:E=INT(RND(1)*3-1):IFP<BTHENE=E-22
125 IFP>BTHENE=E+22
130 IFABS(E)<20THENE=22
135 B=B+E:B1=B:C1=93:IFABS(E)=23THENC1=77
140 IFABS(E)=21THENC1=78
145 IFABS(E)=1THENC1=64
160 IFB>8163THEN180
161 IFB<7680THEN180
162 POKEB+CO,7:POKEB,81
165 IFB<PTHEN170
```



```

166 LI=LI-1:POKE36876,175:POKE36878,15:FORL1=1TO100:NEXT:POKE36876,0:GOTO180
170 POKEB+CO,5:POKEB,C1
175 B=B+E:GOTO160
180 B=B-E:FORI=B1TOBSTEPE:POKEI,32:NEXT:POKE36877,0
200 IFS<-10THEN1000
205 IFS>1000ANDF=0THENLI=LI+1:F=1
210 IFS>5000ANDF=1THENLI=LI+1:F=2
215 IFS>10000ANDF=2THENLI=LI+1:F=3
220 IFLI<1THEN1000
225 IFRND(1)>.7THEN30
230 GOTO50
1000 FORI=1TO2000:NEXT:PRINT"100000000000SCORE"S
1005 IFS>HITHENHI=S:PRINT:PRINT"YOU GOT THE HIGH SCORE":GOTO1020
1010 PRINT:PRINT:PRINT"HIGH SCORE"HI
1020 PRINT:PRINT"MANOTHER GAME?"
1025 GETA$:IFA$="Y"THEN10
1030 IFA$<"N"THEN1025
1035 PRINT:PRINT"BYE"
1050 POKE198,0

```

# Space Birds

Mysterious eggs are dropping from the sky. Large birds hatch out as they hit the ground. What are these strange creatures?

There is a valuable mineral in the clouds of this planet which your company is attempting to obtain. Unfortunately, the birds of this planet thrive on the stuff and it is your job to prevent them eating it all by wiping them out.

As the birds reach the clouds, they eat some of the mineral and lay another egg. Thus you must shoot the birds before they reach the clouds.

Z moves your gun left,

C moves it right, and

M fires. Be careful. If you fire and miss you may burn away some of the mineral. You get half points if you shoot an egg down. Although sometimes they just hatch out. The game ends if you crash, if most of the cloud is eaten or if you kill off all the birds.

```

5 INPUT"SKILL LEVEL";LE:LE=LE-1
6 IFLE<0ORLE>5THEN5
10 POKE36879,8:PRINT"7":CO=30720:G=8143
15 DIMB(5),D(5):CL=22:SC=0
18 FORI=7680TO7701:POKEI+CO,3:POKEI,90:NEXT
19 FORWA=0TOLE
20 FORI=0TOWA:B(I)=7702+INT(RND(1)*22):D(I)=21+INT(RND(1)*3)
25 NEXTI
35 FORI=8164TO8185:POKEI+CO,5:POKEI,160:NEXT
40 POKEG-1,112:POKEG,113:POKEG+1,110
44 NA=WA+1
45 FORJ=1TO2
50 FORI=0TOWA

```



```

55 IFB(I)=0THEN150
60 POKEB(I),32:IFD(I)>0THEN70
65 POKEB(I)-1,32:POKEB(I)+1,32:POKEB(I)-22,32:POKEB(I)-43,32:POKEB(I)-45,32
66 POKEB(I)-23,32:POKEB(I)-21,32:POKEB(I)-44,32
67 IFD(I)>0ANDPEEK(B(I))<>32THEND(I)=INT(RND(1)*3-23)
70 B(I)=B(I)+D(I):IFB(I)>8163THEND(I)=INT(RND(1)*3-23):B(I)=B(I)+D(I)
71 IFD(I)>0ORB(I)=7746THEN76
72 IFPEEK(B(I)-44)=32THEN74
73 POKEB(I)-44,32:CL=CL-1
74 D(I)=INT(RND(1)*3+21):B(I)=INT(RND(1)*22+7702)
75 IFD(I)<0THEN100
76 IFD(I)<0THEN100
85 POKEC0+B(I),7:POKEB(I),81
90 GOTO150
100 POKEB(I)+C0,7:POKEB(I)-1+C0,7:POKEB(I)+1+C0,7:POKEB(I)-22+C0,6
105 POKEB(I)-23+C0,5:POKEB(I)-21+C0,5:POKEB(I)-44+C0,2
106 POKEB(I)-43+C0,5:POKEB(I)-45+C0,5
110 POKEB(I),113:POKEB(I)-1,85:POKEB(I)+1,73:POKEB(I)-22,102
115 POKEB(I)-44,88
120 ONJGOTO125,135
125 POKEB(I)-23,105:POKEB(I)-21,95
130 GOTO150
135 POKEB(I)-45,95:POKEB(I)-43,105
150 IFCL<5THEN1000
160 K=PEEK(197):IFK<33ORK>34THEN200
165 POKEG-1,32:POKEG,32:POKEG+1,32:G=G+(K=33)-(K=34)
170 IFPEEK(G-1)<>32ORPEEK(G)<>32ORPEEK(G+1)<>32THEN1010
171 IFG<8143THENG=8143
172 IFG>8161THENG=8161
175 POKEG-1+C0,1:POKEG+C0,1:POKEG+1+C0,1
180 POKEG-1,112:POKEG,113:POKEG+1,110
200 IFK<>36THEN250
201 POKE36878,15:FORL1=255TO230STEP-1:POKE36877,L1:NEXT
204 X=G-22
205 POKEX+C0,7
210 IFPEEK(X)<>32THENGOSUB300:GOTO220
211 POKEX,93
215 X=X-22:IFX>7679THEN205
216 X=X+22
220 FORY=0-22TOXSTEP-22:POKEY,32:NEXT
225 POKE36877,0
250 NEXTI,J:IFNA>0THEN45
255 NEXTWA
260 WI=1:GOTO1015
300 IFPEEK(X)=90THENCL=CL-1:POKEX,87:GOSUB450:RETURN
305 POKEX+C0,4:POKEX+C0,4:POKEX+C0+21,4:POKEX+C0+23,4
310 POKEX+C0-23,4:POKEX+C0-21,4
315 POKEX,209:POKEX+21,255:POKEX+23,127
320 POKEX-23,127:POKEX-21,255
330 FORY=0TOWA:IFB(Y)<>XORD(Y)<0THEN340
335 IFRND(1)>.7THENB(Y)=0:NA=NA-1:SC=SC+25:GOSUB400:GOTO340
336 D(Y)=INT(RND(1)*3-23):GOSUB450:GOTO345
340 IFB(Y)<>XORD(Y)>0THEN345

```

```

341 SC=SC+50:B(Y)=0:NA=NA-1:GOSUB400
342 POKE36878,15:POKE36876,200:FORL1=250TO150STEP5
343 POKE36877,L1:FORL2=150TO190:POKE36876,L2:NEXTL2:L1
345 NEXTY
350 POKE36878,15:POKE36876,200:FORL1=250TO150STEP5
355 RETURN
400 POKE36878,15:POKE36876,200:FORL1=250TO150STEP5
405 POKE36877,L1:FORL2=150TO190:POKE36876,L2:NEXTL2:L1
410 POKE36876,0:POKE36877,0
415 RETURN
450 POKE36878,10:POKE36875,145:FORL1=220TO255
455 POKE36877,L1:POKE36875,455-L1:NEXT
460 POKE36875,0:POKE36877,0
465 RETURN
1000 WI=2
1005 GOTO1015
1010 WI=3
1015 FORI=1TO1000:NEXT
1020 PRINT"SCORE"SC
1025 IFWI=1THENPRINT"YOU STOPPED THE BIRDS"
1030 IFWI=2THENPRINT"THE BIRDS ATE THE CLOUDS"
1035 IFWI=3THENPRINT"YOU COLLIDED WITH SOMEDEBRIS"
1040 END

```

# Arkenstone

Taking the part of the intrepid hero, you must wrest the arkenstone from the clutches of the evil dragon.

As just about everyone knows, the arkenstone is a mythical gem prized highly by the Dwarves who lost it when the dragon sacked their mountain long ago.

It may require some clever thinking to work out how to manipulate some of the objects you come across.

Your commands are entered as sentences, pressing 'return' after each word and ending the final word with a fullstop. e.g.

Pick(return)

Up(return)

axe.(return)

Commands can be up to 9 words long.

Pick/up/the/large/axe./

(/= 'return')

is just as valid as the example above.

Directions can be entered as full words or as the first letter of the compass point. e.g.  
go/north./ or go/n./

At each point in the game, the computer describes your surroundings and you are required to give your course of action.

Commands available are:

go or move,	kick,	listen,
catch,	pick,	drop,
skewer,	swing,	throw,
fill,	inventory, and	

recover — This must be used when getting the arkenstone, 'Pick up' will not work.

Happy adventuring!

```
1 rem## arkenstone ##
2 Print" ";chr$(14)
5 diml$(7),t$(7),e$(7),d$(7),o%(5)
10 fori=0to7:readl$(i),t$(i),e$(i),d$(i)
15 next:dimo$(5),v$(5),l%(5)
20 fori=0to5:reado$(i),v$(i),l%(i):next
25 sl=1:dr=6:ln=2:ea=0:bu=0
94 gosub1000
95 ifdr=-1then104
96 ifsl=0andrnd(1)>.8thendr=ln
97 ifrnd(1)<.9then100
98 ifsl=1thenPrint"The dragon awakes!":sl=0
99 Print"The dragon hides the arkenstone.":l%(5)=int(rnd(1)*7):dr=l%(5)
100 ifrnd(1)>.8andsl=0andln=drthenPrint"The dragon has killed you!"!stop
104 in=1:Print"Your course of action":inputi$(in)
105 in=in+1:ifin>9thenPrint"Too verbose":goto100
110 ifright$(i$(in-1),1)<>". "theninputi$(in):goto105
111 Print" ";
115 in=in-1
116 i$(in)=left$(i$(in),len(i$(in))-1)
117 ifi$(in)="inventory"thengosub1100:goto100
120 ifi$(1)="pick"thengosub1200:goto95
125 ifi$(1)="drop"thengosub1300:goto95
130 ifi$(1)="kick"thengosub1400:goto95
135 ifi$(1)="move"or i$(1)="go"thengosub1500:goto94
136 ifi$(1)="throw"thengosub2300:goto95
140 fori=0to5
145 if(l%(i)=lnoro%(i)=1)andi$(1)=v$(i)thengosub1600:goto95
150 next:Print"I don't understand you.":goto104
155 data"Mount Gundabad","sheer wall to the west",e,1
160 data"North Mirkwood","lot of trees",sw,20,"South Mirkwood","lot of trees",en
,31
165 data"Lake Town","River Running",we,24,"Wilderland","River Running",wes,365
170 data"the Misty Mountains",eyrie,n,4,"the Lonely Mountain","dark hall",wn,47
175 data"the Lonely Mountain","Pile of treasure",s,6
180 dataca9e,catch,0,spear,skewer,1,bucket,fill,2
185 dataea9le,listen,5
190 dataaxe,swing,6,arkenstone,recover,7
1000 Print"You are in ":Printl$(ln):Print"You can see "
1005 ifln<3orln>4thenPrint"a ";
1010 Printt$(ln):fori=0to5
```

```

1015 if l%(i)=ln and o%(i)=0 then Print "and a "; Print o$(i)
1020 next: if dr=ln then Print: Print "The dragon is here"
1025 if dr=ln and sl=1 then Print "But he's sleeping"
1030 return
1100 Print "You have:"
1105 for i=0 to 5: if o%(i)=1 then Print "a "; o$(i)
1110 next: Print "and are in "; Print l$(ln)
1115 return
1200 for i=0 to 5
1205 if l%(i)=ln and i$(ln)=o$(i) and o%(i)=0 then o%(i)=1: return
1210 next: Print "There isn't a "; i$(ln): return
1300 if i$(ln)="cage" then ea=0
1301 for i=0 to 5: if o%(i)=1 and i$(ln)=o$(i) then o%(i)=0: l%(i)=ln: return
1305 next: Print "You haven't got a "; i$(ln): return
1400 if i$(ln)<>"dragon" then Print "Kick what?": return
1401 if dr<>ln then Print "He isn't here.": return
1405 sl=0: Print "You have awoke the dragon.": return
1500 if sl=0 and ln=dr and rnd(1)>.5 then Print "The dragon won't let you.": return
1505 d$=mid$(i$(ln),1,1): bo=0: if bo=1 then l(3)=ln
1510 for i=1 to len(e$(ln))
1515 if d$=mid$(e$(ln),i,1) then ln=val(mid$(d$(ln),i,1)): return
1520 next: Print "You can't move there": return
1600 for j=1 to i: if o$(i)=i$(j) then 1620
1605 next: Print "Do what with it?": return
1620 on i+1 to 1625,1700,1800,2000,2100,2200
1625 for i=1 to i: if i$(i)="eagle" then 1635
1630 next: Print "Catch what?": return
1635 ea=1: Print "The eagle is now in the cage": return
1700 for i=1 to i: if i$(i)="dragon" then 1710
1705 next: Print "Skewer what?": return
1710 if dr<>ln then Print "The dragon isn't here": return
1715 if rnd(1)>.8 then Print "The dragon is angry, he advances.": sl=0: return
1720 Print "Well done, you've killed the dragon!": dr=-1: return
1800 if ln<3 or ln>4 then Print "There's no-where to fill it.": return
1805 Print "OK": bu=1: return
2000 if ea=0 then Print "You can't here him.": return
2015 Print "The eagle says:"
2020 Print "What is best axe or spear? Why not quench the worm's thirst"
2025 Print "There is something special in Mirkwood"
2030 return
2100 for i=1 to i: if i$(i)="dragon" then 2120
2110 if i$(i)="trees" then Print "That was clever-some trees fell down.": return
2115 next: Print "eh?": return
2120 Print "The dragon is angry, he advances.": sl=0: return
2200 Print "Well done, you've completed your mission": stop
2300 for i=1 to i: if i$(i)="bucket" then 2310
2305 next: Print "You can't throw that.": return
2310 for i=1 to i: if i$(i)="dragon" then 2320
2315 next: Print "Not at that.": return
2320 if dr<>ln then Print "He isn't here.": return
2325 Print "That has angered the dragon, he advances": sl=0: return

```

# Gomoku

A VIC version of the ancient oriental game.

Levels 3 and 4 for a hard game, the others are for if you want to win.

Moves are entered as x coordinate, comma, y coordinate. e.g. 2,3

Attempt to get 5 stones in a row before your opponent.

WARNING — This program takes a few minutes to make its move.

```
1 GOSUB1000
5 GOSUB200
6 GOSUB100:GOTO67
10 HI=0:W=0
11 GC=GC+1
15 Y=1
16 X=1
17 IFW<>0THEN500
20 IFB%(Y,X)<>0ORF=1THEN65
21 DF=-5
22 HL=5:IFGC<5THENHL=GC
25 TH=0:FORL=HLTOLESTEP-1:FORP=-1TO1STEP2
30 IFTH<>0THEN55
35 FORD=0TO7:IFX%(D)*L+X<1ORX%(D)*L+X>10THEN50
40 IFY%(D)*L+Y<1ORY%(D)*L+Y>10THEN50
41 IFTH<>0THEN50
45 GOSUB2000
50 NEXTD
55 NEXTP,L
60 IFABS(TH)>ABS(HI)THENHI=TH:HY=Y:HX=X
61 IFABS(TH)=HITHENHI=TH:HY=Y:HX=X
65 X=X+1:IFX<11THEN20
66 Y=Y+1:IFY<11THEN15
67 IFHI=0THENGOSUB100
71 B%(HY,HX)=-1:P=-1
72 GOSUB5000
75 INPUTHX, HY:P=1
76 IFHX<1ORHX>10ORHY<1ORHY>10THEN75
77 IFB%(HY,HX)<>0THEN75
79 GOSUB5000
80 B%(HY,HX)=1:PRINT"OK"
85 GOTO10
100 C=0
105 HY=INT(RND(1)*10+1):HX=INT(RND(1)*10+1)
110 C=C+1
111 IFC>400THENW=1:GOTO500
115 IFB%(HY,HX)<>0THEN105
120 HI=9:RETURN
200 PRINT"  12345678910":FORI=1TO10:PRINTI;
205 IFI<10THENPRINT" ";
210 PRINT"#####"
215 NEXTI:RETURN
500 IFW=-1THENGOSUB5000:PRINT"I WIN"
```

```
505 IFW=1THENPRINT"YOU WIN"
510 END
1000 PRINT"       GO-MOKU"
1005 YX(0)=-1:XX(0)=0:YZ(1)=-1:XX(1)=1:YZ(2)=0:XX(2)=1
1010 YX(3)=1:XX(3)=1:YZ(4)=1:XX(4)=0:YZ(5)=1:XX(5)=-1
1015 YX(6)=0:XX(6)=-1:YZ(7)=-1:XX(7)=-1
1020 PRINT"ENTER LEVEL(1-4)":INPUTL:IFL<1ORL>4THEN1020
1025 LE=5-LE:OC=0
1030 PRINT":RETURN
2000 NP=0:DI=1
2005 IFBX(Y+YZ(D)*DI,X+XX(D)*DI)=PTHENNP=NP+1
2010 IFNP<DITHEN2025
2015 DI=DI+1:IFDI<=LTHEN2005
2020 IFNP<LTHEN2025
2021 TH=NP*P:IFP=1AND(D-4=DF OR DF-4=D)THENTH=TH+2
2022 IFNP=4ANDP=-1THENW=P
2023 IFNP=5ANDP=1THENW=P
2025 IFNP>0ANDP=1THENDF=D
2030 RETURN
5000 CO=81:CL=0:IFP=1THENCL=6:CO=87
5005 POKE38400+HY*22+HX+2,CL:POKE7680+HY*22+HX+2,CO
5010 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
5015 RETURN
```

## Lunar Lander

Choose one of the three landing sights and guide your fragile lunar module down to a safe landing. Points gained for landing depend on which site you land on. You get half points for a hard landing, none for a crash.

Z thrusts you left,

C thrusts to the right,

M thrusts upwards.

Your motion continues until countered by gravity or thrust in the opposite direction.

As you approach your landing site you will get a close-up scan.

Landing pads are depicted as green lines in the long-range scan.

Can you land at the rightmost site for 150 points?

```
10 SC=7680:CO=38400:S=0
15 POKE36879,8:DY=0:DX=.1:Y=0:X=0
20 PRINT":XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX "
24 PRINT":  _  _  _  _  _  _  _  _  _  "
25 PRINT":  _  _  _  _  _  _  _  _  _  "
30 PRINT":  _  _  _  _  _  _  _  _  _  "
35 PRINT":  _  _  _  _  _  _  _  _  _  "
40 PRINT":  _  _  _  _  _  _  _  _  _  "
45 PRINT":  _  _  _  _  _  _  _  _  _  "
```

```

50 PRINT"  "
55 PRINT"  "
60 PRINT"  "
65 PRINT"  "
70 PRINT"  "
75 PRINT"  "
80 PRINT"  "
85 PRINT"  "
90 PRINT"  "
95 FORI=0163T00105:POKEI+00720,2:POKEI,160:NEXT
99 PRINT"  "
100 POKESC+INT(Y)*22+X,32
105 Y=Y+DY:X=X+DX:IFX>21THENX=0
110 IFX<0THENX=21
115 IFY<0THENY=0
116 IFPEEK(SC+INT(Y)*22+X)<>32THEN1000
117 IFY>10ANDX<10THEN200
118 IFY>5ANDX>=10.5ANDX<=16THEN400
120 POKECO+INT(Y)*22+X,3
125 POKESC+INT(Y)*22+X,00
130 DY=DY+.02:K=PEEK(197)
135 DY=DY+(K=36)/8+((K=33)+(K=34))/20
140 DX=DX+((K=34)-(K=33))/10
145 GOTO100
200 Y1=Y:X1=X:Y=0:X=(X-5)*4+INT(RND(1)*6):PO=100
205 PRINT"  "
210 PRINT"  "
215 PRINT"  "
220 PRINT"  "
225 PRINT"  "
230 PRINT"  "
235 PRINT"  "
240 PRINT"  "
245 PRINT"  "
250 PRINT"  "
255 PRINT"  "
260 PRINT"  "
265 PRINT"  "
270 PRINT"  "
275 PRINT"  "
280 PRINT"  "
285 PRINT"  "
290 PRINT"  "
295 PRINT"  "
300 PRINT"  "
305 PRINT"  "
310 PRINT"  "
315 FORI=0163T00105:POKEI+00720,2:POKEI,160:NEXT:PRINT"  "
320 P=SC+INT(Y)*22+X:POKEP,32:POKEP+22,32:POKEP+23,32:POKEP+21,32
325 X=X+DX:Y=Y+DY
326 IF(Y<0ANDDY<-.5)ORX<1ORX>20THENY=Y1-1:X=X1:GOTO20
327 IFY<0THENY=0
329 P=SC+INT(Y)*22+X

```





# Earth Defense

As commander of Earth's defense systems, you must stop the invading missiles from reaching the ground.

Move your sights around the screen and launch your missiles to intercept the enemy missiles at just the right moment. Be careful, you only have a limited supply of projectiles.

The game will end if you halt the invasion or if 6 missiles hit the ground.

W moves your sights up,

A left,

D right,

X down, and

S fires a missile.

Earth is depending on you.

```
1 POKE36879,8
5 PRINT"***EARTH DEFENSE***":PRINT:PRINT"ENTER SKILL LEVEL- (2-7)"
6 INPUTSK:IFSK<2ORSK>7THEN5
10 PRINT"J":SH=0:FORI=8142T08163:POKEI,160:POKEI+30720,5:NEXT
15 P=-1:CO=30720:X=10:Y=11:CI=0:SC=0
20 FORW=1TOSK:NO=-1:P=-1:SH=0:MI=15+INT(SK/2)
22 FORI=0T05:P%(I)=0:X%(I)=10:Y%(I)=19:NEXTI
25 FORI=8164T08185:POKEI+CO,5:POKEI,160:NEXTI:POKE36849,3:POKE36850,3:POKE36851,
3
26 POKE8129,112:POKE8130,113:POKE8131,110
30 FORI=0TOW:M%(I)=7680+INT(RND(1)*22):S%(I)=M%(I):D%(I)=INT(RND(1)*3+21)
35 NEXTI
50 IFSK>4THEN53
51 FORI=0TOSK:GOTO54
53 FORI=0TOW
54 IFM%(I)=0ORI>WTHEN100
55 OR=0:C=93
56 IFD%(I)=21THENC=78
57 IFD%(I)=23THENC=77
58 POKEM%(I)+CO,7:POKEM%(I),C
59 M%(I)=M%(I)+D%(I):IFM%(I)<8186THEN65
60 GOSUB2000:M%(I)=7680+INT(RND(1)*22):S%(I)=M%(I):D%(I)=INT(RND(1)*3+21):GOTO10
0
65 IFPEEK(M%(I))<>32THENGOSUB1000:IFGR=1THEN100
70 POKEM%(I)+CO,2:POKEM%(I),42
100 K=PEEK(197):IFK=64ORK=41THEN150
101 IFSH=1AND(K=17ORK=18ORK=9ORK=26)THENSH=0:GOTO110
105 POKE7680+Y*22+X,32
110 X=X+(K=17)-(K=18)
115 Y=Y+(K=9)-(K=26)
120 IFX<0THENX=0
125 IFX>21THENX=21
130 IFY<1 THENY=1
135 IFY>19 THENY=19
140 POKE38400+Y*22+X,3:POKE7680+Y*22+X,91
```

```

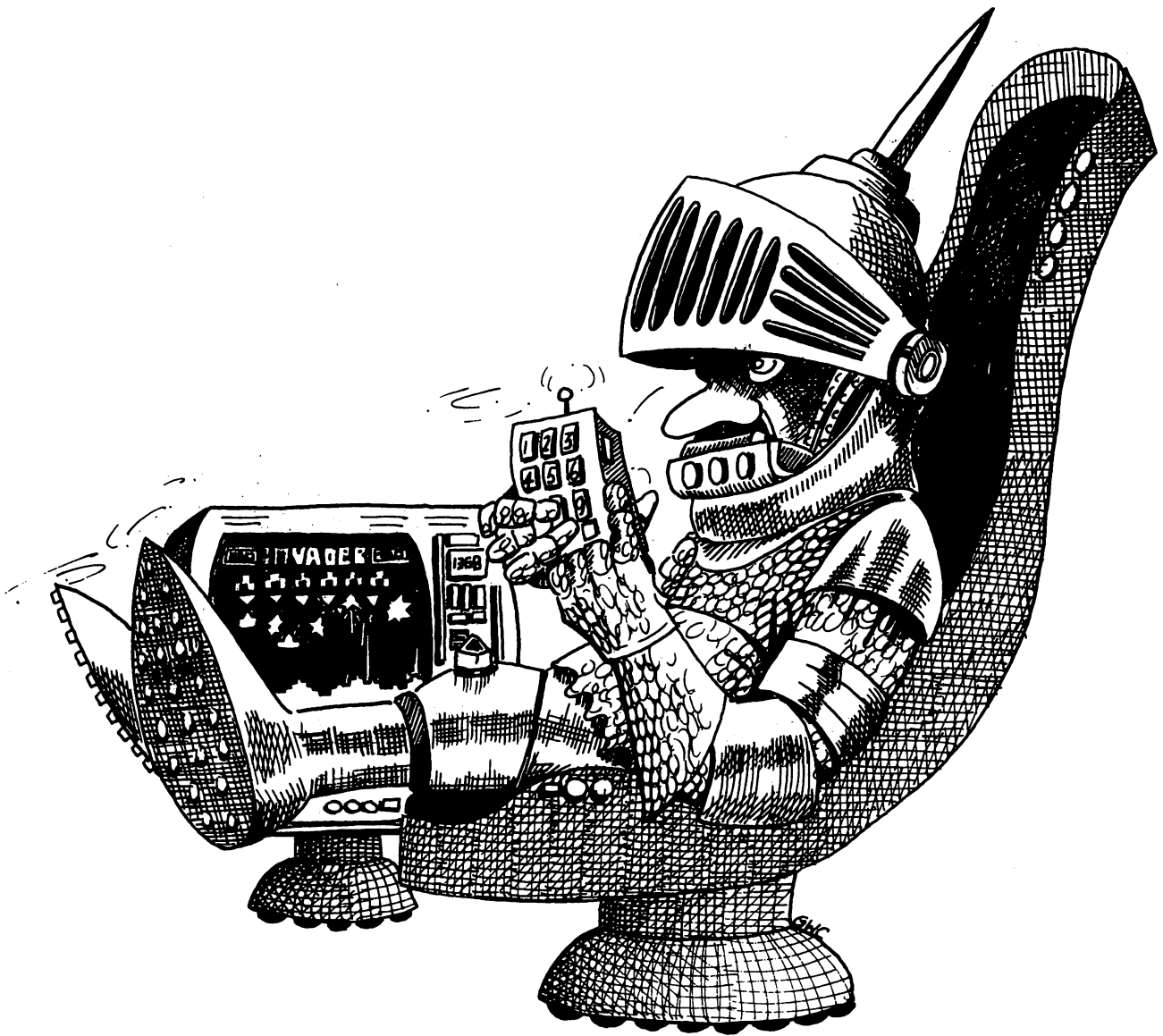
150 IFP=-1THEN205
155 FORJ=0TO5:IFP%(J)=0THEN200
160 POKE7680+Y%(J)*22+X%(J),32
165 Y%(J)=Y%(J)+(Y%(J)>TY%(J))-(Y%(J)<TY%(J))
170 X%(J)=X%(J)+(X%(J)>TX%(J))-(X%(J)<TX%(J))
175 IFX%(J)=TX%(J)ANDY%(J)=TY%(J)THEN006SUB3000:GOTO200
180 POKE36400+Y%(J)*22+X%(J),7:POKE7680+Y%(J)*22+X%(J),46
200 NEXTJ
205 IFK<>41THEN220
210 IFP=5ORP=-2THEN220
211 IFP%(P+1)=1THENP=P+1:GOTO217
215 P=P+1:P%(P)=1:TX%(P)=X:TY%(P)=Y:SH=1:POKE36400+X+Y*22,2
216 POKE36878,5:POKE36877,250
217 IFP>5THENP=0
220 IFCI>5THEN4000
222 IFCI>5THEN4000
223 IFP=-2THEN225
224 POKE38849,3:POKE38850,3:POKE38851,3:POKE8129,112:POKE8130,113:POKE8131,110
225 NEXTI:IFNO<WTHEN50
230 NEXTW
240 PRINT"WELL DONE, YOU STOPPED THE INVASION"
245 PRINT"YOU SCORED"SC*SK
250 PRINT"AND LET"CI"MISSILES THROUGH"
260 PRINT"YOU WERE ON LEVEL"SK
999 POKE36878,0:POKE36877,0:END
1000 E=M%(I):IFC<8120THENRETURN
1001 POKE36878,15:POKE36877,130
1004 GR=1:POKE36879,42
1005 POKECO+E-21,7:POKECO+E-23,7:POKECO+E,7:POKECO+E-22,7
1010 POKECO+E-44,7:POKECO+E-43,7:POKECO+E-45,7
1015 POKEE,93:POKEE-23,77:POKEE-21,78:POKEE-22,93:POKEE-44,64
1020 POKEE-43,73:POKEE-45,85
1025 POKE36877,200
1030 IFE=8129 OR E=8130 OR E=8131THENP=-2
1031 M=I:GOSUB2000:M%(M)=0:NO=NO+1
1035 POKECO+E,2:POKEE,104:POKEE-23,32:POKEE-22,32:POKEE-21,32
1040 POKEE-43,32:POKEE-44,32:POKEE-45,32
1045 POKE36878,0:POKE36877,0:CI=CI+1:POKE36879,0:RETURN
2000 FORN=S%(M)TOM%(M)STEPD%(M):POKEN,32:NEXTM
2005 M%(M)=7680+INT(RND(1)*22):S%(M)=M%(M):D%(M)=INT(RND(1)*3+21)
2010 RETURN
3000 EX=X%(J):EY=Y%(J):E=7680+EX+EY*22:POKE36878,6:POKE36877,220
3005 POKEE+CO,2:POKEE+CO+1,1:POKEE+CO-22,1:POKEE+CO-21,1
3010 POKEE+CO-23,1:POKEE+CO-1,1:POKEE+CO+21,1:POKEE+CO+22,1:POKEE+CO+23,1
3015 FORL=1TO4:ONL GOTO3020,3030,3040,3050
3020 POKEE,81:GOTO3080
3030 POKEE,87:GOTO3080
3040 POKEE+CO,1:POKEE,74:POKEE+1,75:POKEE-21,73:POKEE-22,85
3045 GOTO3080
3050 POKEE-1,93:POKEE+1,93:POKEE+21,74:POKEE+22,64:POKEE+23,75
3060 POKEE-23,85:POKEE-22,64:POKEE-21,73
3070 POKEE,32
3080 FORM=1TO50:NEXTM,L

```

```

3085 POKEE-1,32:POKEE+1,32:POKEE+21,32:POKEE+22,32:POKEE+23,32
3090 POKEE-23,32:POKEE-22,32:POKEE-21,32
3095 MI=MI-1:XX(J)=10:YX(J)=19:PX(J)=0:IFP=5THENP=0
3096 IFMI=0THENP=-2
3100 FORL=0TOW
3105 IFM%(L)<>EANDM%(L)<>E+1ANDM%(L)<>E-22ANDM%(L)<>E-21THEN3115
3110 SC=SC+10#W:M=L:GOSUB2000:M%(L)=0:NO=NO+1
3115 NEXTL:POKE36876,0:POKE36877,0:RETURN
4000 PRINT"YOU HAVE BEEN          DESTROYED"
4005 PRINT"YOU SURVIVED UNTIL    ATTACK WAVE"W", "
4010 GOTO245

```



# Nightmare Castle

Wander around the graphically depicted locations in this realtime adventure. Watch out for the monster in your search for the treasure.

There are doors which open and close, and one which requires the key to open it. In one of the rooms, there is an hidden passage-way through the wall which can only be found by trying to go through the wall. You may come across the invisible maze and even THE ROOM.

THE ROOM is a strange place. All sorts of weird things happen, but you'll have to find out what yourself. CLUE: if the treasure was in the room, it won't be when you enter.

The cursor controls at the bottom right of the keyboard move you around the screen. Going through a door means you enter another room.

Objects are dropped by pressing the space bar. Pressing the divide key (/) will thrust your sword to the left, if you have one.

You will leave a trail in the invisible maze, if you reach it alive. The game ends when you bring the treasure safely to the room where you began (or if you are eaten), NOT AN EASY TASK!  
THE OBJECTS ARE SHOWN AS FOLLOWS:

YOU  
THE MONSTER  
THE SWORD  
THE TREASURE  
THE KEY  
TREES  
GOOD LUCK!

```
5 POKE650,255
10 SP=0:GP=0:R=1:SR=INT(RND(1)*4+1):GR=4:MR=GR+INT(RND(1)*3-1):X1=10:Y1=10:KP=0
15 CO=30720:X=10:Y=10:S=7703:G=8145
20 KR=9:K=7756:MP=32
25 IFRND(1)>.5THENGR=10
50 ONRGOSUB1100,1200,1300,1400,1500,1600,1700,1800,1900,2000
100 P=7480+X+Y*22
101 POKEP,32:GETA$
102 IFR=5THENPOKEP,224
105 DX=(A$="III")-(A$="II"):DY=(A$="J")-(A$="I"):D=DX+DY*22
106 PE=PEEK(P+D):IFPE=32ORPE=224THEN115
110 IFKP=1ANDPE=102THEN115
111 IFPE=31THENSP=1:GOTO115
112 IFPE=28THENGP=1:GOTO115
113 IFPE=127THENKP=1:GOTO115
114 DX=0:DY=0
115 X=X+DX:Y=Y+DY
120 IFR=3ANDX=13ANDY=11THENR=4:GOTO126
121 IFX>0ANDX<21ANDY>0ANDY<22THEN145
125 R=R+(X=0)-(X=21)+(Y=22)-(Y=0))*5
126 IFX=0THENX=20
127 IFX=21THENX=1
128 IFY=0THENY=21
```

```

129 IFY=22THENY=1
130 IFR=3ANDX=20THENX=12:Y=11
135 IFR=4ANDX=13THENX=1:Y=11
140 GOTO50
145 P=7680+X+Y*22:POKEP+CO,2:POKEP,81
150 IFSP=1ORSRC>RTHEN160
155 POKES+CO,7:POKES,31
160 IFGP=1ORORC>RTHEN170
165 POKEG+CO,5:POKEG,28
170 IFKP=1ORKRC>RTHEN180
175 POKEK+CO,7:POKEK,127
180 IFGP=1ANDR=1THENEND
185 IFMR<ORANDRND(1)>.99ANDMR--1THENMR=MR+(MR>R)-(MR<R):MP=32:X1=1:Y1=10
190 IFMR<ORORRND(1)<.5THEN250
191 M=7680+X1+Y1*22
195 POKEM,MP:IFOR=RORGP=1THEN220
200 IFSP=0THEN220
205 IFRND(1)>.99THENMR=INT(RND(1)*9+1):MP=32:X1=20:Y1=10:GOTO250
210 DX=(X1<X)-(X1>X):DY=(Y1<Y)-(Y1>Y):D=DX+DY*22
215 GOTO230
220 DX=(X1>X)-(X1<X):DY=(Y1>Y)-(Y1<Y):D=DX+DY*22
230 IFPEEK(M+D)=32ORPEEK(M+D)=81THEN240
235 IFGP=0THENDX=0:DY=0:D=0
240 X1=X1+DX:Y1=Y1+DY:M=M+D
241 IFX1<1THENX1=1:Y1=Y1+1
242 IFX1>20THENX1=20
243 IFY1<1THENY1=1
244 IFY1>21THENY1=21
245 MP=PEEK(7680+X1+Y1*22):M=7680+X1+Y1*22
246 POKEM+CO,4:POKEM,94
250 IFMR=RANDX=X1ANDY=Y1THENEND
251 IFA$C" "THEN260
252 IFSP=1THENSP=0:SR=R:S=7703
255 IFGP=1THENGP=0:GR=R:G=8145
257 IFKP=1THENKP=0:KR=R:K=7756
260 IFA$C"/"ORS=0THEN100
265 S=7680+X+Y*22-1:POKES+CO,7:POKES,31
270 IFX-1=X1ANDY=Y1THENMR=-1
275 FORI=1TO100:NEXT:POKES,32
280 GOTO100
1000 POKE646,CL
1005 PRINT" ";:FORI=1TO22:PRINT" ";:NEXT
1010 FORI=8163TO8185:POKEI+CO,CL:POKEI,160:NEXT
1015 PRINT" ";
1020 FORI=1TO20:PRINT" ";:NEXT
1025 RETURN
1100 POKE36879,9:CL=1:GOSUB1000
1105 POKE7689,32:POKE7690,32:POKE7691,32
1120 POKE7921,32:POKE7943,32:POKE7965,32
1125 RETURN
1200 POKE36879,109:CL=5:GOSUB1000
1205 POKE7900,32:POKE7922,32:POKE7944,32:POKE7690,32:POKE7691,32:POKE7692,32

```

```

1210 FORI=1TO20
1215 CL=INT(RND(1)*460)+7702:IFPEEK(CL)<>32THEN1215
1220 POKECL+CO,5:POKECL,88:NEXTI
1225 RETURN
1300 POKE36879,27:CL=3:GOSUB1000
1305 POKE7690,32:POKE7691,32:POKE7692,32
1310 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX";
1315 PRINT"  XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX";
1320 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX";
1325 PRINT"  XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX";
1330 RETURN
1400 POKE36879,172:CL=2:GOSUB1000
1405 POKE7900,32:POKE7922,32:POKE7944,32
1410 POKE7921,224:POKE7943,224:POKE7965,224
1415 RETURN
1500 POKE36879,136:CL=2:GOSUB1000
1505 FORI=1TO100
1506 CL=7680+INT(RND(1)*506):IFPEEK(CL)<>32THEN1506
1507 :POKECL,96:NEXT
1510 POKE7900,32:POKE7922,32:POKE7944,32:POKE7925,32
1515 POKE7690,32:POKE7691,32:POKE7692,32:POKE7713,32
1520 POKE7735,32:POKE7714,32:POKE7715,32
1525 RETURN
1600 POKE36879,216:CL=7:GOSUB1000
1605 FORCL=1TO200:POKE7680+INT(RND(1)*506),160:NEXT
1610 POKE8174,32:POKE8175,32:POKE8176,32:
1615 POKE7921,32:POKE7943,32:POKE7965,32
1620 POKE7942,32:POKE8153,32
1625 RETURN
1700 POKE36879,62:CL=0:GOSUB1000
1705 POKE7900,32:POKE7922,32:POKE7944,32:POKE7921,32:POKE7943,32:POKE7965,32
1706 IFRND(1)>.5THENPOKE8174,32:POKE8175,32:POKE8176,32
1710 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX";
1715 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX";
1730 RETURN
1800 POKE36879,56:CL=2:GOSUB1000
1805 POKE7900,32:POKE7922,32:POKE7944,32
1806 IFRND(1)>.2THENPOKE7921,32:POKE7943,32:POKE7965,32
1810 POKE8174,32:POKE8175,32:POKE8176,32
1830 RETURN
1900 POKE36879,14:CL=5:GOSUB1000
1905 POKE7900,32:POKE7922,32:POKE7944,32
1910 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX";
1920 RETURN
2000 POKE36879,184:CL=4:GOSUB1000
2005 POKE7900,32:POKE7922,32:POKE7944,32
2020 MR=R:X1=19:Y1=20
2025 SP=0:SR=INT(RND(1)*3+8):S=7703
2030 KP=0:K=7756:KR=INT(RND(1)*3+1)
2031 GP=0:GR=4:G=8145
2035 RETURN

```

# Checkers

Challenge the computer to the well known game of checkers.  
Enter your move as x coordinate followed by y coordinate, e.g.

FROM  
? AF  
TO  
? BE

Try not to let the VIC win.

```
1 GOSUB9000
50 MO=0
60 GOSUB7000
1000 PRINT"XXXXXXXXXXXX"
1005 PRINT"THIS MOVE":MO=0:INPUTFH$
1010 PRINT":TO":INPUTTH$
1050 PRINT":STAND BY"
1060 X$=LEFT$(FH$,1):Y$=RIGHT$(FH$,1):FX=ASC(X$):FY=ASC(Y$)
1065 X$=LEFT$(TH$,1):Y$=RIGHT$(TH$,1):TX=ASC(X$):TY=ASC(Y$)
1070 FX=FX-64:FY=FY-64:TX=TX-64:TY=TY-64
1420 MO=0
1430 A%(TY,TX)=A%(FY,FX):A%(FY,FX)=B
1450 IFABS(TY-FY)>1THENMO=1:A%(FY+((TY-FY)/2),FX+((TX-FX)/2))=B:T=T+1
1470 GOSUB7000
2000 Y=8
2006 X=8
2020 IF A%(Y,X)<>C AND A%(Y,X)<>KTHEN2100
2030 IFA%(Y,X)=C AND Y=8THENA%(Y,X)=K
2040 FORD=0TO3
2041 Q=-1
2045 IFX+2*X(D)<1 OR X+2*X(D)>8THEN2090
2046 IFY+2*Y(D)<1 OR Y+2*Y(D)>8THEN2090
2050 IFA%(Y+Y(D),X+X(D))=H OR A%(Y+Y(D),X+X(D))=W AND A%(Y+2*Y(D),X+2*X(D))=BTHE
NQ=D
2070 IFA%(Y,X)<>K ANDD>1THEN2100
2080 IFQ>-1ANDQ<4THEN2125
2090 NEXTD
2100 IFA%(Y,X)=HANDY=1THENA%(Y,X)=W
2110 X=X-1:IFX>0THEN2020
2115 Y=Y-1:IFY>0THEN2006
2120 IFQ=-1THEN2350
2125 PX=X+2*X(Q):PY=Y+2*Y(Q)
2130 S=S+1
2135 A%(Y+Y(Q),X+X(Q))=B
2140 A%(PY,PX)=A%(Y,X)
2145 A%(Y,X)=B
2150 GOSUB7000
2155 M=-1
```

```

2160 FORD=0T03
2165 IFPX+2*X(D)<1 OR PX+2*X(D)>8THEN2200
2166 IFPY+2*Y(D)<1 OR PY+2*Y(D)>8THEN2200
2170 IFA%(PY+Y(D),PX+X(D))<0HAND A%(PY+Y(D),PX+X(D))<0WTHEN2180
2175 IFA%(PY+Y(D)*2,PX+2*X(D))=BTHENM=D
2180 IFA%(PY,PX)<0K AND D>1THEN2210
2190 IFM=-1THEN2210
2200 NEXTD
2210 IFM=-1THEN50
2220 A%(PY+Y(M),PX+X(M))=B
2222 A%(PY+2*Y(M),PX+2*X(M))=A%(PY,PX)
2224 A%(PY,PX)=B
2226 S=S+1
2230 GOTO50
2350 Y=0
2360 PY=INT(RND(1)*8+1):PX=INT(RND(1)*8+1)
2370 Y=Y+1
2371 Q=-1
2375 IFY>400THEN2440
2380 IFA%(PY,PX)<0CANDA%(PY,PX)<0KTHEN2360
2390 FORD=0T03
2395 Q=-1
2396 IFPY+Y(D)<1ORPY+Y(D)>8THEN2425
2397 IFPX+X(D)<1ORPX+X(D)>8THEN2425
2400 IFA%(PY,PX)=CANDD>1THEN2425
2410 IFA%(PY+Y(D),PX+X(D))=BTHENQ=D
2420 IFQ=-1ANDQ<4THEN2460
2425 NEXTD
2430 IFY<401THEN2360
2440 F$="L"
2450 GOTO7000
2460 A%(PY+Y(Q),PX+X(Q))=A%(PY,PX)
2470 A%(PY,PX)=B
2490 GOTO50
7000 PRINT"##### ABCDEFGH"
7005 FORY=1TO8:POKECO+Y*22,1:POKESC+Y*22,Y
7010 FORX=1TO8:CL=0:IFA%(Y,X)=160THENCL=6
7015 IFA%(Y,X)=C OR A%(Y,X)=KTHENCL=5
7020 IFA%(Y,X)=H OR A%(Y,X)=WTHENCL=1
7025 POKECO+Y*22+X,CL:POKESC+Y*22+X,A%(Y,X)
7030 NEXTX,Y
7035 PRINT"#####COMPUTER"S"### " :PRINT" HUMAN"T
7040 PRINT" "
7045 PRINT" "
7050 PRINT" "
7210 IFF$="L"THENPRINT:PRINT"MI CONCEDE THE GAME":STOP
7230 IFS=12THENPRINT:PRINT"#####I WIN":STOP
7240 IFT=12THENPRINT:PRINT"#####YOU WIN":STOP
7260 U$="":IFM=1THENPRINT"#####CAN YOU JUMP AGAIN " :INPUTU
$

```





```
7265 MO=0
7310 IFLEFT$(U$,1)="Y" THENFH$=CHR$(TX+64)+CHR$(TY+64):GOTO1010
7320 RETURN
7900 STOP
9000 DIMA%(8,8)
9005 Y(0)=1:X(0)=-1:Y(1)=1:X(1)=1
9010 Y(2)=-1:X(2)=-1:Y(3)=-1:X(3)=1
9050 H=209:C=215:W=139:K=151
9060 B=160:Q=-1:F$="":S=0:T=0
9061 CO=30400:SC=7680
9065 FORY=1TO8:IF2*INT(Y/2)=Y THENFORX=1TO7STEP2:GOTO9075
9070 FORX=2TO8STEP2
9075 A%(Y,X)=160
9080 IFINT(X/2)*2=X THENA%(Y,X-1)=32
9085 IFINT(X/2)*2<X THENA%(Y,X+1)=32
9090 NEXTX,Y
9115 FORY=1TO3
9120 IF2*INT(Y/2)=Y THENFORX=1TO7STEP2:GOTO9130
9125 FORX=2TO8STEP2
9130 A%(Y,X)=C
9135 NEXTX,Y
9140 FORY=6TO8
9145 IF2*INT(Y/2)=Y THENFORX=1TO7STEP2:GOTO9155
9150 FORX=2TO8STEP2
9155 A%(Y,X)=H
9160 NEXTX,Y
```

```

9165 FH$="":TH$=""
9300 POKE36879,8:PRINT":DRAUGHTS":PRINT:PRINT"DO YOU WANT FIRST MOVE"
9310 INPUTY$:PRINT":":IFLEFT$(Y$,1)="Y"THENRETURN
9340 GOSUB7000
9350 A=INT(RND(1)*3+1)*2:Q=INT(RND(1)*2)
9370 A%(3+Y(Q),A+X(Q))=C:A%(3,A)=160
9390 RETURN

```

# Dambuster

Destroy the enemy's dam and help win the war.

You are given a 3-D, Panoramic view of the dam and the surrounding countryside. You must line up your plane as it approaches the dam and drop your bouncing bomb at the right moment.

Z moves your plane left,

C moves it right, and

M drops a bomb.

You begin with five planes, but beware of the enemy flak.

```

5 POKE650,129
10 PRINT":":POKE36879,88:CO=30720
15 FORI=7680T07921:POKEI,160:POKEI+CO,3:NEXT
20 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX";
21 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX";
25 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX";
26 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX";
30 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX";
35 FORY=7954T08185STEP22:J=INT((Y-7910)/22)
40 FORX=Y-JTOY+J+1:IFX>8185THEN45
41 POKEX,160:POKEX+CO,6
45 NEXTX:IFY-J<8121THENPOKEY-J,233
46 IFY+J+1<=8185THENPOKEY+J+1,223
47 NEXTY
49 FORPL=1T05
50 W1=160:W2=W1:W3=W1:W4=W1:N=W1:B1=W1:B2=W1:R1=W1:R2=W1:R3=W1
55 X=8102+INT(RND(1)*12):B=0:D=1
60 POKE36878,4:POKE36877,129:DE=0
61 FL=INT(RND(1)*253)+7955
65 P=PEEK(FL):P1=PEEK(FL+1):P2=PEEK(FL+22):P3=PEEK(FL+23)
70 IFP=32ORP1=32ORP2=32ORP3=32THEN100
71 POKE36879,40
72 POKE36878,10:POKE36877,200
75 POKEFL+CO,7:POKEFL+CO+1,7:POKEFL+CO+22,7:POKEFL+CO+23,7
80 POKEFL,213:POKEFL+1,201:POKEFL+22,202:POKEFL+23,203
85 IFP=120ORP1=120ORP2=120ORP3=120THENDE=1
86 POKE36878,4:POKE36877,250

```







```

155 IFPEEK(X-22) <> 32 OR PEEK(X-21) <> 32 OR PEEK(X-20) <> 32 OR PEEK(X-19) <> 32 THEN 1000
160 IFPEEK(X+23) <> 32 OR PEEK(X+24) <> 32 THEN 1000
165 POKE X+1+CO, 0 : POKE X+2+CO, 0 : POKE X-22+CO, 0 : POKE X-21+CO, 0 : POKE X-20+CO, 0 : POKE X-19
+CO, 0
166 POKE X+CO, 0 : POKE X+3+CO, 0 : POKE X+23+CO, 0
170 IF Y=1 THEN 200
180 POKE X, 107 : POKE X+1, 196 : POKE X+2, 160 : POKE X+3, 236
185 POKE X-21, 85 : POKE X-20, 73 : POKE X-19, 233 : POKE X+23, 81
190 GOTO 215
200 POKE X+24+CO, 0
205 POKE X, 251 : POKE X+1, 160 : POKE X+2, 196 : POKE X+3, 115
210 POKE X-22, 223 : POKE X-21, 85 : POKE X-20, 73 : POKE X+24, 81
215 POKE X1, 32 : POKE X1+1, 32 : POKE X1+2, 32 : POKE X1+3, 32 : POKE X1-22, 32 : POKE X1-21, 32 : POKE
X1-20, 32
220 POKE X1-19, 32 : POKE X1+23, 32 : POKE X1+24, 32
221 IFRND(1) > .9 THEN X1=X1+22
225 IFPEEK(X1+Y1*5+22)=223 OR PEEK(X1+Y1*5+22)=233 THEN X1=X1-22 : GOTO 250
235 IFPEEK(X1+Y1*3)=46 OR PEEK(X1+Y1*3+22)=46 THEN X1=X1-22 : GOTO 250
236 IFPEEK(X1+Y1*2)=46 AND S1 <> X1+Y1*2 THEN X1=X1-22 : Y1=-Y1 : GOTO 250
240 IFRND(1) > .9 THEN Y1=-Y1
241 IFRND(1) > .9 THEN Y1=-Y1
242 IFRND(1) > .9 THEN X1=X1-22
245 X1=X1+Y1
250 IF X1 < 770 OR X1 > 8160 THEN X1=7961 : Y1=-1
255 POKE X1+1+CO, 2 : POKE X1+2+CO, 2 : POKE X1-22+CO, 2 : POKE X1-21+CO, 2 : POKE X1-20+CO, 2
260 POKE X1-19+CO, 2
265 IF Y1=1 THEN 300
270 POKE X1+CO, 0 : POKE X1+3+CO, 2 : POKE X1+23+CO, 0
275 POKE X1, 107 : POKE X1+1, 196 : POKE X1+2, 160 : POKE X1+3, 236
280 POKE X1-21, 85 : POKE X1-20, 73 : POKE X1-19, 233 : POKE X1+23, 81
285 GOTO 315
300 POKE X1+CO, 2 : POKE X1+3+CO, 0 : POKE X1+24+CO, 0
305 POKE X1, 251 : POKE X1+1, 160 : POKE X1+2, 196 : POKE X1+3, 115
310 POKE X1-22, 223 : POKE X1-21, 85 : POKE X1-20, 73 : POKE X1+24, 81
315 IFA$="S" AND S=0 THEN S=X-1 : D=Y : IF Y=1 THEN S=X+4 : POKE 36877, 240
320 IFS=0 THEN 400
325 J=1
330 POKES, 32 : S=S+D : S=S-7680 : SP=INT(S/22) : SP=S-SP*22 : S=S+7680
335 IF SP=0 OR SP=21 THEN S=0 : GOTO 400
340 IFS=X1 OR S=X1+1 OR (S=X1-21 AND Y1=-1) OR (S=X1-20 AND Y1=1) THEN 2000
345 IFPEEK(S) <> 32 THEN S=0 : J=2 : GOTO 400
350 POKES+CO, 0 : POKES, 46
395 J=J+1 : IF J < 3 THEN 330
400 IFS1=0 THEN 500
425 J=1
430 POKES1, 32 : S1=S1+D1 : S1=S1-7680 : SP=INT(S1/22) : SP=S1-SP*22 : S1=S1+7680
435 IF SP=0 OR SP=21 THEN S1=0 : GOTO 500
440 IFS1=X OR S1=X+1 OR (S1=X-21 AND Y1=-1) OR (S1=X-20 AND Y1=1) THEN 1000
445 IFPEEK(S1) <> 32 THEN S1=0 : J=2 : GOTO 500
450 POKES1+CO, 2 : POKES1, 46
495 J=J+1 : IF J < 3 THEN 430
500 IFS1=0 AND RND(1) > .9 THEN S1=X1-2 : D1=Y1 : IF Y1=1 THEN S1=X1+5 : POKE 36877, 240
505 GOTO 100

```

```

1000 X1=X
2000 POKE36878,15
2001 POKEX1,32:POKEX1+1,32:POKEX1+2,32:POKEX1+3,32:POKEX1+23,32:POKEX1+24,32
2005 POKEX1-22,32:POKEX1-20,32:POKEX1-19,32
2010 FORI=X1T08185STEP23
2011 POKE36875,(250-I/35)*8
2015 POKEI+CO,4:POKEI+CO+21,4:POKEI+CO-21,4:POKEI+CO-23,4
2020 POKEI,160:POKEI-21,255:POKEI+21,255:POKEI-23,127
2021 FORJ=1T0100:NEXT
2025 POKEI+CO,0:POKEI+CO-23,0:POKEI-21,32:POKEI+21,32
2030 NEXT
2035 I=I-23:POKEI+CO,7:POKEI+CO+1,7:POKEI,127:POKEI+1,255
2040 POKE36879,42
3000 POKE650,0:POKE36878,0:POKE36877,0:POKE36875,0
3005 GOT03005

```

# Night Raid

Under cover of darkness you pilot your plane over the city, picking out your target in the light of the flashes of enemy flak.

Try and bomb the reactor before you are hit by flak or one of the enemy's ground to air missiles.

W moves your plane up,

X down,

D accelerates you forwards (you already move forwards), and

A backs you up.

S will drop a bomb on the city.

```

5 CO=30720
10 POKE36879,8:PRINT":M=0:M1=0:B=0:P=7680:F=0
15 PRINT"
20 PRINT"
25 PRINT"
30 PRINT"
35 PRINT"
40 FORI=8142T08185:POKEI+CO,0:POKEI,160:NEXT
50 POKEP,32:P=P+1:K=PEEK(197):P=P+(K=17)*2-(K=18)
55 P=P+(K=9)-(K=26)*22
60 IFF<7680THENP=7680
61 IFF>7965THENP=P-22
65 IFFPEEK(P)<>32ANDPEEK(P)<>77ANDPEEK(P)<>89THEN1000
70 POKEP+CO,3:POKEP,62
75 IFM>0ORM1>0THENPOKE36878,5:POKE36877,130
76 IFM<1ANDM1<1THENPOKE36877,0
80 IFM>0ORM<0THEN1000
90 IFRND(1)>.95THENM=8029:POKEM+CO,4:POKEM,42:FORI=1T0100:NEXT
100 IFM<1THEN150
105 POKEM+CO,1:POKEM,77:POKEM+1,32:POKEM+22,32:M=M-23
110 IFM>7679THEN115
111 M=0

```

```

112 FORI=8029T07680STEP-23:POKEI,32:NEXT:POKE36877,0:GOTO150
115 IFPEEK(M)=32THEN135
120 IFPEEK(M)=62THEN1000
125 IFPEEK(M)=46THENPOKEM,42:FORI=1T0100:NEXT:B=0:M=0:GOTO111
135 POKEM+CO,2:POKEM+1+CO,2:POKEM+CO+22,2
140 POKEM,127:POKEM+1,123:POKEM+22,124
150 IFM1>0ORM1<0THEN170
160 IFRND(1)>.95THENM1=8062:POKEM1+CO,4:POKEM1,42:FORI=1T0100:NEXT
170 IFM1<1THEN220
175 POKEM1+CO+22,1:POKEM1+22,89:POKEM1+23,32:M1=M1-22
180 IFM1>7679THEN185
181 M1=0
182 FORI=8062T07680STEP-22:POKEI,32:NEXT:POKE8084,93:POKE8084+CO,0:POKE36877,0:G
OTO220
185 IFPEEK(M1)=32THEN205
190 IFPEEK(M1)=62THEN1000
195 IFPEEK(M1)=46THENPOKEM1,42:FORI=1T0100:NEXT:B=0:M1=0:GOTO181
205 POKEM1+CO,2:POKEM1+1+CO,2:POKEM1+CO+22,2
210 POKEM1,225:POKEM1+22,126:POKEM1+23,126
220 IFK=41ANDB=0THENB=P+22
225 IFB=0THEN300
226 POKE36878,12:POKE36876,B/25-75
230 POKEB,32:B=B+23:IFPEEK(B)=32ANDB<8185THEN290
231 POKE36876,0
235 IFB>8185THENB=0:GOTO300
240 IFB<>MANDB<>M1THEN260
245 POKEB+CO,4:POKEB,42:FORI=1T0100:NEXT:POKEB,32
250 IFB=MTHENB=0:POKEM+1,32:POKEM+22,32:M=0:GOTO111
255 B=0:POKEM1+22,32:POKEM1+23,32:M1=0:GOTO181
260 IFB<8032THEN290
261 POKE36879,42:POKEB+CO,7:POKEB+CO+1,7:POKEB,77:POKEB+1,78
262 POKE36878,15:POKE36877,147:FORI=1T0300:NEXT
264 POKE36879,8
265 IFB<8059ORB>8060THEN282
266 POKEB+CO,1:POKEB+CO+1,1:POKEB+CO+22,1:POKEB+CO+23,1
267 POKEB,32:POKEB+1,32
270 FORI=1T050:POKE36879,127:POKE36879,42
271 POKEB,32:IFI>=25THENPOKEB+1,32:POKEB+22,32:POKEB+23,32
275 IFI<25THENPOKEB,87
280 IFI>=25THENPOKEB,85:POKEB+1,73:POKEB+22,74:POKEB+23,75
281 NEXTI:PRINT"J":POKE36878,0:POKE36877,0:STOP
282 POKEB,32:POKEB+1,32
283 IFB<>8052ANDB<>8074THEN286
284 IFM>0THENPOKEM,32:POKEM+1,32:POKEM+22,32
285 M=-1:GOTO112
286 IFB<>8051THEN289
287 IFM1>0THENPOKEM1,32:POKEM1+22,32:POKEM1+23,32
288 M1=-1:GOTO182
289 B=0:GOTO300
290 POKEB+CO,5:POKEB,46
300 IFRND(1)<.9THEN50
301 F=INT(RND(1)*264+7681)
305 IFF=MORF=M1THEN50

```



```

306 :POKE36878,9:POKE36875,130:POKE36876,129:POKE36877,163
310 POKEF+CO,4:POKEF+CO-23,4:POKEF+CO-21,4:POKEF+CO+21,4:POKEF+CO+23,4
315 POKE36879,40:POKEF,209:POKEF-23,127:POKEF-21,255:POKEF+21,255:POKEF+23,127
320 IFF=PORF-21=PORF-23=PORF+21=PORF+23=PTHEN1015
325 FORI=1TO200:NEXT:POKE36879,8:POKEF,32:POKEF-23,32:POKEF-21,32:POKEF+21,32
330 POKEF+23,32:POKE36875,0:POKE36877,0:POKE36876,0:GOTO50
1000 POKE36879,120:POKEP+CO,2:POKEP+CO+23,2:POKEP+CO+2,2:POKEP+CO+46,2:POKEP+CO+
44,2
1010 POKEP,127:POKEP+2,255:POKEP+23,209:POKEP+44,255:POKEP+46,127
1015 POKE36875,0:POKE36876,0:POKE36877,0:POKE36878,0
1020 END

```

# Tank Battle

Form a strategy to defeat the computer's tank in this realtime game. Gain points by shooting the computer's tank and its fuel drums. Move around the screen, chasing the computer and avoiding the mines.

You start off at the bottom right corner, the computer is at the top left.

W moves your tank up,

A moves it left,

D moves it right,

X moves it down, and

S fires your gun.

The winner is the first one to get 150 points.

```

5 POKE650,255
10 POKE36879,248:PRINT"J":CO=30720:SC=0:CC=0
15 FORI=1TO15:M=7680+INT(RND(1)*506):POKEM+CO,2:POKEM,42:NEXT
20 FORI=1TO10:M=7682+RND(1)*5+((RND(1)*5+1)*22)
25 POKEM+CO,5:POKEM,160
30 NEXT
35 FORI=1TO10:M=8185-RND(1)*5-((RND(1)*5+1)*22)
40 POKEM+CO,6:POKEM,160
45 NEXT
50 FORI=7684TO7728STEP22:POKEI+CO,2:POKEI+1+CO,2:POKEI+2+CO,2
55 POKEI,81:POKEI+1,81:POKEI+2,81:NEXT
60 FORI=8135TO8181STEP22:POKEI+CO,3:POKEI+1+CO,3:POKEI+2+CO,3
65 POKEI,81:POKEI+1,81:POKEI+2,81:NEXT
70 POKE36400,5:POKE38905,6:POKE7680,114:POKE8185,113
75 C=7680:P=8185:DC=22:DP=-22:EP=0:EC=0
80 DIMD%(3):D%(0)=1:D%(1)=22:D%(2)=-1:D%(3)=-22
100 GETA$:IFA$=""ORA$="S"THEN150

```

```

105 EP=(A$="A")-(A$="D")+((A$="W")-(A$="X"))*22
110 IFEP=0THEN150
111 POKE36878,5:POKE36877,230
115 DP=EP:POKEP,32:P=P+DP
117 IFP<76800RP>8185THENP=P-DP
120 IFPEEK(P)=42THENPOKEP+CO,4:POKE36877,140:FORI=1TO200:NEXT:CC=CC+20
125 IFPEEK(P)<>32THENP=P-DP
130 POKEP+CO,6:CH=107:IFDP=22THENCH=114
135 IFDP=-1THENCH=115
140 IFDP=-22THENCH=113
145 POKEP,CH
150 POKE36877,0:POKE36876,0
151 EC=DC
152 IFPEEK(C+EC)=32ANDRND(1)>.9THEN175
155 I=0
160 IFC+EC<7680THEN175
165 IFC+EC>8185THEN175
170 IFPEEK(C+EC)=32THEN200
175 I=I+1
180 IFI>8THEN195
181 IFRND(1)<.9THEN193
185 IFC<PTHENEC=DX(INT(RND(1)*2)):GOTO160
190 EC=DX(INT(RND(1)*2+2)):GOTO160
193 EC=DX(INT(RND(1)*4))
194 GOTO160
195 EC=0:GOTO205
200 DC=EC:IFPEEK(C+DC*2)=46THENDC=-DC:GOTO150
205 POKEC,32:C=C+EC:POKEC+CO,5:CH=107:IFDC=22THENCH=114
210 IFDC=-1THENCH=115
215 IFDC=-22THENCH=113
220 POKEC,CH
225 IFS=0ANDAS$="S"THENS=P+DP:DS=DP:POKE36876,245:POKE36877,150
230 IFS=0THEN300
231 J=1
235 POKES,32:S=S+DS:IFPEEK(S)=32THEN260
236 POKE36877,130
240 IFPEEK(S)<>810RS>7910THEN255
245 POKES+CO,4:POKES,42
250 FORI=1TO200:NEXT:POKES,32:SC=SC+10
255 IFS=CTHENSC=SC+20:POKEC+CO,4:POKEC,42:POKE36876,130
256 S=0:GOTO300
260 S=S-7680:Y=INT(S/22):X=S-Y*22:S=S+7680
265 IFX=00RX=210RY=00RY=22THENS=0:GOTO300
270 POKES+CO,6:POKES,46
275 J=J+1:IFJ<3THEN235
300 IFRND(1)>.9ANDS1=0THENS1=C+DC:CS=DC:POKE36877,140:POKE36876,245
305 IFS1=0THEN400
306 J=1
310 POKES1,32:S1=S1+CS:IFPEEK(S1)=32THEN335
311 POKE36877,130
315 IFPEEK(S1)<>810RS1<7910THEN330
320 POKES1+CO,4:POKES1,42
325 FORI=1TO200:NEXT:POKES1,32:CC=CC+10

```



```

330 IFS1=PTHECC=CC+20:POKEP+CO,4:POKEP,42:POKE36876,130
331 S1=0:GOTO400
335 S1=S1-7680:Y=INT(S1/22):X=S1-Y*22:S1=S1+7680
340 IFX=0ORX=21ORY=0ORY=22THENS1=0:GOTO400
345 POKES,32:S=S-7680:Y=INT(S/22):X=S-Y*22
350 S=S+7680:IFX=0ORX=21ORY=0ORY=22THENS=0:GOTO400
355 POKES1+CO,5:POKES1,46
360 J=J+1:IFJ<3THEN310
400 IFSC<150ANDCC<150THEN100
1000 POKE650,0:FORI=1TO2000:NEXT:PRINT"J"
1005 PRINT"SCORE: ":PRINT"YOU"SC
1010 PRINT"COMPUTER"CC
1015 POKE36876,0:POKE36877,0:POKE36878,0

```

## Danger Star

Accelerate your fighter up the trench of the Danger Star, avoiding the enemy laser fire. Then, as your target comes into view, fire your torpedo at the exhaust port and hope for a direct hit.

Z moves your fighter right,

C moves it right, and

M fires a torpedo.

Any numerical key will alter your speed up the trench.

Remember, don't fire too early.

```

1 POKE36879,24:POKE650,129:SC=4+INT(RND(1)*11):SP=1:DI=0:TP=0:TL=5:CO=30720
2 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
3 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
4 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
5 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
6 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
10 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
15 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
20 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
25 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
30 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
35 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
40 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
45 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
50 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
60 FORI=7680TO8164STEP22:POKEI+CO,2:POKEI,160:NEXT:FORI=7701TO8185STEP22:POKEI+CO,2
70 POKEI,160:NEXT
80 FORI=8165TO8184:POKEI+CO,2:POKEI,160:NEXT
100 GETA$:IFA$=""THEN120
110 IFA$="Z"ORA$="C"THEN500
115 IFA$="M"ANDTP=0ANDTL<>0THENTP=8098+SC:TL=TL-1:T(1)=32:T(2)=32:T(3)=32:GOTO120
0

```

```

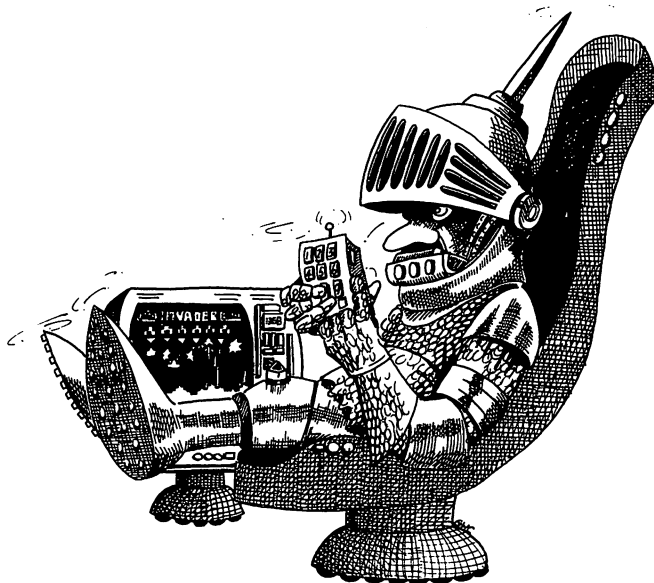
118 SP=VAL(A$)
120 DI=DI+1
130 IFRND(1)<.114ANDDI<460THENGOSUB1000
135 IFRND(1)<.11THENGOSUB2500
140 IFDI=460THENGOSUB1500
150 IFDI=560THEN2000
160 PRINT"XXXXXXXXXXXXXXXXXXXX";DI
161 PRINT"TTTTTTTTTTTTTTTTTTTT";TL
162 IFTP<>0THENGOSUB3000
165 IFSP>7THEN180
170 FORI=1TO1400-SP#200:NEXT
180 GOTO100
500 PRINT"XXXXXXXXXXXXXXXXXXXX":PRINTTAB(SC) " "
505 SC=SC+(A$="Z")-(A$="C")
510 IFSC>16THENSC=16
520 IFSC<4THENSC=4
525 PRINT"XXXXXXXXXXXXXXXXXXXX":PRINTTAB(SC)"  "
530 GOTO120
1000 POKE36879,120:Y=INT(RND(1)*6):X=2+INT(RND(1)*16):FL=7988+(Y*22+X)
1010 F(1)=PEEK(FL-23)
1020 F(2)=PEEK(FL-21)
1030 F(3)=PEEK(FL)
1040 F(4)=PEEK(FL+21)
1050 F(5)=PEEK(FL+23)
1060 POKEFL-23+CO,2:POKEFL-23,127:POKEFL-21+CO,2:POKEFL-21,255:POKEFL+CO,4:POKEFL,81
1070 POKEFL+21+CO,2:POKEFL+21,255:POKEFL+23+CO,2:POKEFL+23,127
1075 FORI=1TO111:NEXT
1080 POKEFL-23+CO,0:POKEFL-23,F(1):POKEFL-21+CO,0:POKEFL-21,F(2):POKEFL+CO,0:POKEFL,F(3)
1090 POKEFL+21+CO,0:POKEFL+21,F(4):POKEFL+23+CO,0:POKEFL+23,F(5)
1091 IFF(3)=TPORF(3)=TP+22ORF(3)=TP+23THEN1200
1100 POKE36879,24
1110 RETURN
1200 POKETP,T(1):POKETP+22,T(2):POKETP+23,T(3):GOTO3200
1500 POKE7954+CO,2:POKE7954,213:POKE7955+CO,2:POKE7955,201
1510 POKE7976+CO,2:POKE7976,202:POKE7977+CO,2:POKE7977,203
1520 RETURN
2000 POKE36879,120:FORI=1TO250:NEXT:POKE36879,40
2005 FORI=1TO250:NEXT
2010 POKE36879,120:FORI=1TO250:NEXT:POKE36879,40
2015 FORI=1TO250:NEXT
2020 POKE36879,120:FORI=1TO250:NEXT:POKE36879,40
2025 FORI=1TO250:NEXT
2030 POKE36879,8:PRINT"YOU FAILED !!!!!!"
2050 REM**KABOOM**
2100 END
2500 FORI=7998TO8152STEP22
2501 IFI=TPORI=TP+23THENH=1
2510 POKEI+CO,2:POKEI,103:NEXT
2515 FORI=1TO100:NEXT
2520 FORI=7998TO8152STEP22
2530 POKEI,32:NEXT

```

```

2535 IFH=1THEN1200
2540 IFSC=9ORSC=10THEN2000
2550 RETURN
3000 POKETP,T(1):POKETP+22,T(2)
3001 POKETP+23,T(3)
3010 TP=TP-22
3020 IFTP<7724THEN3200
3030 IF(TP=7998ORTP=7999)ANDSP>5ANDDI>525THEN4000
3031 IFPEEK(TP)=160ORPEEK(TP)=46THENZ(1)=128
3032 IFPEEK(TP+22)=160ORPEEK(TP+22)=46THENZ(2)=128
3034 IFPEEK(TP+23)=160ORPEEK(TP+23)=46THENZ(3)=128
3035 T(1)=PEEK(TP)
3036 T(2)=PEEK(TP+22)
3038 T(3)=PEEK(TP+23)
3040 POKETP+CO,0:POKETP,103+Z(1):POKETP+22+CO,0:POKETP+22,106+Z(2):POKETP+23+CO,
0
3045 POKETP+23,101+Z(3)
3050 RETURN
3200 TP=0:FORI=1TO3:Z(I)=0:NEXT:H=0
3201 RETURN
4000 FORI=1TO5
4005 POKE7954+CO,7:POKE7954,213:POKE7955+CO,2:POKE7955,201
4010 POKE7976+CO,7:POKE7976,202:POKE7977+CO,7:POKE7977,203
4020 FORJ=1TO250:NEXTJ
4030 POKE7954+CO,2:POKE7954,213:POKE7955+CO,2:POKE7955,201
4040 POKE7976+CO,2:POKE7976,202:POKE7977+CO,2:POKE7977,203
4050 NEXT
4060 FORI=1TO10
4100 POKE36879,120:FORJ=1TO250:NEXT:POKE36879,40
4110 FORI1=1TO180:NEXT
4120 NEXT
4200 POKE36879,8:PRINT"=WELL DONE LUKE"
4210 PRINT"=YOU DESTROYED THE =DEATH STAR="
4220 PRINT"=AND SAVED EVERYONE.="
4300 REM**END**
4310 END

```



# Reversi

Reversi (often called Othello™) was invented in 1888. Reversi was played on a standard checkers board, using double-sided pieces—red on one side, black on the other. In his splendid book "Discovering Old Board Games" (Shire Publications Ltd., Aylesbury, 1980), R.C. Bell explains that black begins the game by placing a piece, black side up on one of the four central squares on the empty board. Red replies by placing her first piece, red side up on another central square. "These four squares are covered in the first four turns of play, and then the players continue alternately, placing their pieces on a square adjacent to the one occupied by an enemy piece," Mr. Bell writes.

Any enemy pieces in a straight line between the latest piece placed and another one of the player's pieces, is then turned over to show the player's colour. The winner is the player with the most pieces when the board is completely covered, or when neither player can move.

You'll find the VIC plays slowly, but remarkably well, in this version of the game. You get the choice of going first or second. You move by entering the number of the square down the side, then the number across, entering both as one double-digit number (such as 36).

## Structure of the program:

Line 6: Sets a black border.

Lines 10 to 110: Sets all elements (except those around the 'frame') of the board to the code of a full stop (42). Lines 70 to 100 set the first four pieces in place (noting that X has been set equal to the character code of X and O to the code of O).

Lines 120 to 170: Give the player the option of first move.

Routine from line 1000: This is the heart of the game, the VIC's Reversi-playing intelligence.

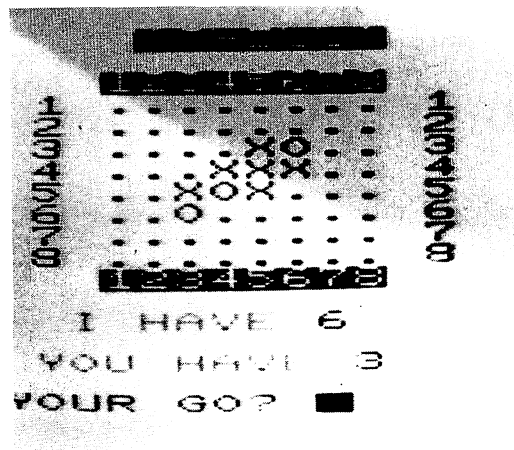
Lines 1340: If both H and R equal zero, then neither the computer nor the human player can move, so the game is over. In this case, control is sent to the routine from line 5000 which determines who has won.

Routine from 2000: This accepts the player's move, and acts on this. The player enters a zero if she is unable to move (line 2040).

Routine from 3000: Prints and reprints the board. Note the use of the 'home' key here to make the pieces change before your eyes.

Routine from 4000: This flips the pieces.

Routine from 5000: End of game.



### Suggestions for improvement:

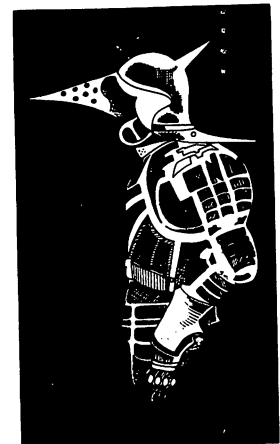
- Change the representation of the pieces to use, say, red and blue circles.
- Change the computer's strategy by experiment with the value 1220 to 1270. Changing all the two's to three's improves the VIC's play slightly, but slows its response time down.
- Add some sound for each piece as it is flipped.

```
1 REM REVERSI CHARLTON/HARTNELL
2 REM NOTE LETTER O, NOT ZERO
3 REM CLS IS CLEAR SCREEN
4 PRINT"O":REM CLS
5 X=ASC("X"):O=ASC("O")
6 POKE 36879,24:REM BLACK BORDER
10 DIMA(10,10)
20 FORB=1TO10
30 FORC=1TO10
40 IF B<>1 AND C<>1 AND B<>10 AND C<>10 THEN A(B ,C)= ASC(",")
50 NEXTC
60 NEXTB
70 A(5,5)=X
80 A(6,6)=X
90 A(6,5)=O
100 A(5,6)=O
110 P=0
120 PRINT"DO YOU WANT TO GO":REM CLS, RED
130 PRINT"FIRST (1-YES, 2-NO)"
140 INPUT W
150 PRINT"O":REM CLS, BLUE
160 GOSUB 3000
170 IF W=1 THEN 2000
1000 PRINT" MY MOVE      "
1010 S=0
1020 T=X
1030 H=0
1040 FORA=2 TO 9
1050 FORB=2 TO 9
1060 IF A(A,B)<>46 THEN 1320
1070 Q=0
1080 FORC=-1 TO 1
1090 FORD=-1 TO 1
1100 K=0
1110 F=A
1120 G=B
1130 IFA(F+C,G+D)<>S THEN 1180
1140 K=K+1
1150 F=F+C
1160 G=G+D
1170 GOTO1130
1180 IFA(F+C,G+D)<>T THEN 1200
1190 Q=Q+K
1200 NEXTD
1210 NEXTC
1220 IFA=2 OR A=9 THEN Q=Q*2
1230 IFB=2 OR B=9 THEN Q=Q*2
```

```

1240 IFA=3 OR A=8 THEN Q=Q/2
1250 IFB=3 OR B=8 THEN Q=Q/2
1260 IF(A=2 OR A=9) AND (B=3 OR B=8) THEN Q=Q/2
1270 IF(A=3 OR A=8) AND (Z=2 OR Z=9) THEN Q=Q/2
1280 IF Q<H OR Q=0 OR (RND(1)>0.3 AND Q=H) THEN 1320
1290 H=Q
1300 M=A
1310 N=B
1320 NEXTB
1330 NEXTA
1340 IFH=0 AND R=0 THEN 5000
1350 IFH=0 THEN 1370
1360 GOSUB 4000
1370 GOSUB 3000
2000 INPUT"YOUR GO":R
2010 S=X
2020 T=0:REM LETTER 0
2035 REM 0 TO PASS
2040 IF R=0 THEN 2090
2050 IF R<11 OR R>88 THEN 2000
2060 M=INT(R/10)+1
2070 N=R-10*INT(R/10)+1
2080 GOSUB 4000
2090 GOSUB 3000
2100 GOTO 1000
3000 PRINT "X":REM HOME
3010 C=0
3020 H=0
3030 PRINT:PRINT"■ REVERSI":PRINT
3032 REM BLACK,RVSON,RVSOFF
3035 PRINT"■ 12345678■":REM RED,RVSON,RVSOFF,BLUE
3040 FORB=2 TO 9
3050 PRINTB-1;
3060 FORD=2TO9
3070 PRINT CHR$(A(B,D));
3080 IF A(B,D)=X THEN C=C+1
3090 IF A(B,D)=0 THEN H=H+1
3100 NEXTD
3110 PRINTB-1
3120 NEXTB
3130 PRINT"■ 12345678■":REM RED,RVSON,RVSOFF,GREEN
3140 PRINT
3150 PRINT" I HAVE":C
3152 PRINT
3155 PRINT" YOU HAVE":H;" "
3157 PRINT
3170 RETURN
4000 FORC=-1 TO 1
4010 FORD=-1 TO 1
4020 F=M
4030 G=N
4040 IFA(F+C,G+D)<>S THEN 4080
4050 F=F+C

```





```

4060 G=G+D
4070 GOTO4040
4080 IFA(F+C,G+D)<>T THEN 4140
4090 A(F,G)=T
4100 IF M=F AND N=G THEN 4140
4110 F=F-C
4120 G=G-D
4130 GOTO4090
4140 NEXTD
4150 NEXTC
4160 RETURN
5000 IFC>H THEN PRINT"I WON";C;H
5010 IFH<C THEN PRINT"YOU WON";C;H
5020 IFH=C THEN PRINT"IT'S A DRAW!"
5030 END

```

# Fruit Machine

This splendid program, which uses the VIC's graphics most effectively, was written for the book by M Kendall. There are three reels, and each reel has four symbols. You can stop all the reels, then either HOLD or NUDGE each one.

Due to effective government cost-cutting, you start with 5p, and each game costs you just 2p.

## The winning combinations:

Same, same, same	-5p
Same, same, any	-3p
Any, same, same	-1p

## Your controls:

- Any key to stop the reels
- N to NUDGE
- H to HOLD
- Any to play again

```

0 POKE36879,27:PRINT"MADE BY M.KENDALL 1982"
1 PRINT"XXXXXXXX DO YOU WANT":PRINT"XXXXXXXX INSTRUCTIONS?":PRINT"XXXXXXXX (Y OR N)"
2 GETQ$:IFQ$=""THEN2
3 IFQ$="Y"THEN GOSUB1000
4 L=5
5 PRINT"0"
6 L=L-2
7 W=0
8 POKE 36876,10
9 POKE 36879,72
10 A$(1)="X  ~~~~~  ~~~~~  ~~~~~  ~~~~~  ~~~~~  ~~~~~  ~~~~~"
20 A$(2)="X  ~~~~~  ~~~~~  ~~~~~  ~~~~~  ~~~~~  ~~~~~  ~~~~~"
30 A$(3)="X  ~~~~~  ~~~~~  ~~~~~  ~~~~~  ~~~~~  ~~~~~  ~~~~~"
40 A$(4)="X  ~~~~~  ~~~~~  ~~~~~  ~~~~~  ~~~~~  ~~~~~  ~~~~~"

```

```

45 FORN=1TO3
50 A=INT(RND(1)*4)+1
51 A(N)=A
54 G=(N-1)*7+1
55 PRINTTAB(G)";          XXXXXXXXXXXX          XXXXXXXXXXXX          XXXXXXXXXXXX          XXXXXXXXXXXX
"
56 PRINT"X"
60 PRINTTAB(G);A$(A)
61 POKE 36875,200:FORZ=1TO10:NEXT:POKE36875,0
66 PRINT"X"
70 NEXTN
80 GETQ$:IFQ$<>" "THEN130
100 GOTO45
190 FORN=1TO3
200 GETQ$:IFQ$=""THEN200
210 IFQ$="H"THEN250
220 IFQ$="N"THENGOSUB300:GOTO240
230 GOTO200
240 PRINTTAB((N-1)*7+1)"XXXXXXXXXX JUDGE.TTTTTTTT"
245 GOTO260
250 PRINTTAB((N-1)*7+1)"XXXXXXXXXX HOLD.TTTTTTTT"
260 NEXTN
270 GOTO500
299 END
300 A=INT(RND(1)*4)+1
301 A(N)=A
305 PRINTTAB((N-1)*7+1)"          XXXXXXXXXXXX          XXXXXXXXXXXX          XXXXXXXXXXXX          XXXXXXXXXXXX
"
310 PRINT"X";TAB((N-1)*7+1)A$(A)
320 PRINT"X"
330 RETURN
500 PRINT"XXXXXXXXXXXXXXXXX=WINNINGS":
510 IFA(1)=A(2)ANDR(2)=A(3)THENW=5:GOTO550
520 IFA(1)=A(2)THENW=3
530 IFA(2)=A(3)THENW=1
550 PRINTW;"IP MINUS 2P "
560 PRINT"X FOR THIS GAME"
563 IFW=5THENPRINT"X JACKPOTTTT":GOSUB9000
565 PRINT"XXX"
570 L=L+W:PRINT"X MONEY LEFT___":L
575 IF L>20 THEN8000
580 IFL<0THENPRINT"TTT YOU ARE BROKE!!":GOTO700
600 GETQ$:IFQ$<>" "THEN5
610 GOTO600
700 PRINT"XTHATS THE END FOR YOU"
701 FORZ=128TO255:POKE36877,Z:FORZ=1TO10:NEXT,Z
702 POKE36877,0
710 GETQ$:IFQ$=""THEN710
730 RUN
1000 PRINT"X"
1010 PRINT"X VIC FRUIT MACHINE
1020 PRINT"
1030 PRINT"X THERE ARE 3 REELSX

```

```

1040 PRINT"AND EACH REEL HAS FOUR
1050 PRINT"SYMBOLS.␣
1060 PRINT"▣ YOU CAN STOP ALL THE
1070 PRINT"REELS THEN EITHER HOLD
1080 PRINT"OR NUDGE EACH ONE.␣
1090 PRINT"▣ YOU START WITH 5P ␣
1100 PRINT"EACH GAME COSTS 2P.
1110 PRINT"▣PRESS BAR TO CONTINUE."
1120 GETA$:IFA$=""THEN1120
2000 PRINT"▣"
2019 PRINT"▣ THE WINNING PATTERNS␣
2020 PRINT" ARE:␣
2030 PRINT"▣ SAME SAME SAME=5P␣
2040 PRINT"▣ SAME SAME ANY =3P␣
2050 PRINT"▣ ANY SAME SAME=1P␣
2060 PRINT"▣ THE CONTROL KEYS ARE:
2070 PRINT"▣ ANY=STOP REELS␣
2080 PRINT"▣ N=NUDGE␣
2090 PRINT"▣ H=HOLD␣
2100 PRINT"▣ ANY=SPIN AGAIN␣
2110 PRINT"▣ PRESS BAR TO PLAY"
2120 GETA$:IFA$=""THEN2120
2130 RETURN
7999 END
8000 PRINT"▣CONGRATULATIONS":PRINT"▣YOU'VE BROKEN THE BANK":PRINT"▣ I'M
OUT OF MONEY
8001 POKE36878,15
8002 POKE36879,24
8005 PRINT"▣SORRY, THATS THE END"
8010 FORN=1TO12
8015 READA:POKE36875,A
8020 FORZ=1TO150:NEXTZ
8030 NEXTN
8040 DATA135,147,135,175,175,163,183,183,191,195,195,195,27
8100 RESTORE
8110 FORN=1TO13
8115 READA:POKE36876,A
8120 FORZ=1TO150:NEXTZ
8130 NEXTN
8135 PRINT"▣"
8140 POKE36875,0
8150 END

```



```

9000 POKE36876,10
9001 FORZ=1TO10
9002 POKE36879,74
9010 FORM=200TO220+Z*2
9020 POKE36876,M
9030 NEXTM,Z
9035 POKE36876,0
9036 POKE36879,72
9040 RETURN
9500 REM-----
9510 REM
9520 REM M.KENDALL
9530 REM
9540 REM (c) 1982
9550 REM
9560 REM-----

```

# Dr Watson and Dr Audio

This is a pair of simple programs, in which the VIC thinks of a number between one and a hundred, and challenges you to guess it. In 'Dr Watson', the feedback is words, and it is pretty easy to guess the number. 'Dr Audio', by contrast, uses a tone to let you know how close you are to the correct number. Once you've played about five games, you'll probably be quite pleased to see how good you become at interpreting the sounds.

## Dr Watson

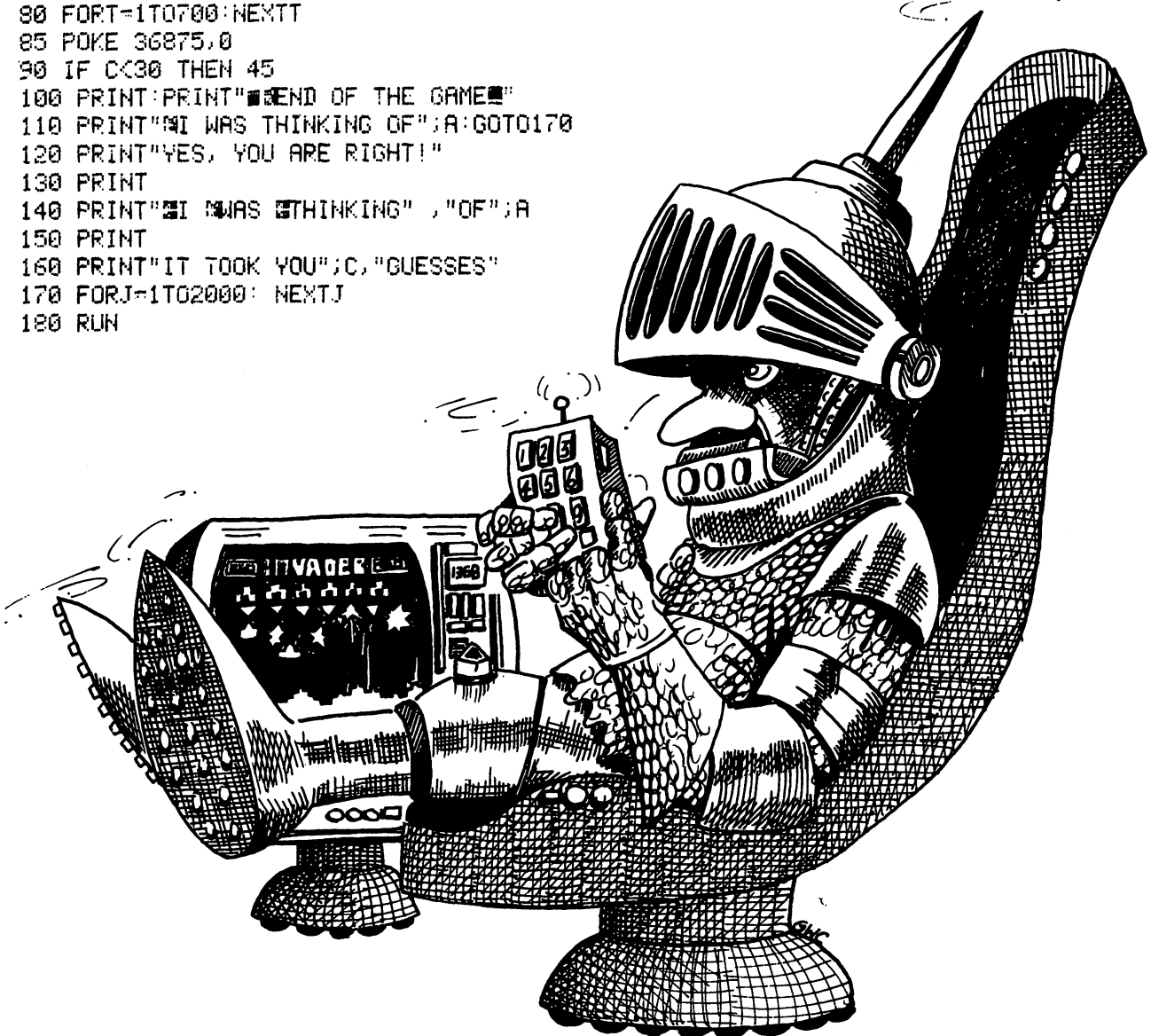
```

5 REM DR WATSON
6 C=1:PRINT"J"
10 PRINT"I AM THINKING OF A      NUMBER BETWEEN ONE      AND 100"
30 A=INT(RND(1)*100)+1
40 PRINT"WHAT IS IT";
45 INPUT B
50 C=C+1
55 REM "WRONG" IN RED
60 IFB<A THEN PRINT"NO, " ; B ; " IS WRONG"
65 IFB=A THEN 120
67 PRINT"GUESS";C;" IS ";
70 IFB<A THEN PRINT"TOO LOW":REM GREEN, BLUE
80 IFB>A THEN PRINT"TOO HIGH":REM PURPLE, BLUE
90 IF C<10 THEN 45
100 PRINT:PRINT"END OF THE GAME"
110 PRINT" I WAS THINKING OF";A:GOTO170
120 PRINT"YES, YOU ARE RIGHT!"
130 PRINT
140 PRINT" I WAS THINKING" , "OF";A
150 PRINT
160 PRINT"IT TOOK YOU";C," GUESSES"
170 FORJ=1TO2000: NEXTJ
180 RUN

```

# Dr Audio

```
5 REM DR AUDIO
6 C=1
7 POKE36878,7
10 PRINT"I AM THINKING OF A      NUMBER BETWEEN ONE      AND 100"
30 A=INT(RND(1)*100)+1
40 PRINT"WHAT IS IT?"
45 INPUT B
50 C=C+1
55 REM "WRONG" IN RED
60 IF B<A THEN PRINT"NO.";B;"IS" WRONG"
65 IF B=A THEN 120
67 PRINT"GUESS";C;"IS "
70 POKE 36875, ABS(A-B)+128
90 FORT=1TO700:NEXTT
85 POKE 36875,0
90 IF C<30 THEN 45
100 PRINT:PRINT"END OF THE GAME"
110 PRINT"MI WAS THINKING OF";A:GOTO170
120 PRINT"YES, YOU ARE RIGHT!"
130 PRINT
140 PRINT"MI WAS THINKING" ,"OF";A
150 PRINT
160 PRINT"IT TOOK YOU";C,"GUESSES"
170 FORJ=1TO2000:NEXTJ
180 RUN
```



# Tight Squeeze

This program is fun to play, especially for younger children. The VIC selects two numbers between one and 13, tells you how much money you have, and asks you to bet on the likelihood of the third number lying between the two numbers generated. If you are correct, and the third number does lie between the first two, you win double the amount you 'invested'. If you are wrong, you lose the amount. So long as you have money, you'll be offered new rounds of the game. You start with \$20, and you can bet any or all of the money you have in hand.

## Structure of the program:

Line 20: Sets your starting stake to \$20.

Lines 30 to 40: Generate the first two numbers.

Line 50: Checks to see that the two numbers are further apart than one. If they are not, the VIC is sent back to lines 30 to 40 to try again.

Line 60: Generates the third number, which is not shown to the player at this stage.

Line 70: Checks that the third number is not equal to either of the first two. If it is, the computer returns to line 60 to get another one.

Lines 80 to 137: Print out the money the player has, the two numbers the VIC has chosen and asks the player to enter her bet.

Lines 150 to 170: Accept the bet (150), return for a new bet if the player tries to bet more than she has (160) and responds (very colourfully) with COWARD!! if the bet is less than one dollar.

Line 180: A delay loop before the VIC reveals its third number.

Lines 190 to 260: Reveals the third number (190), jumps to the end if bet was less than one (200),

jumps to the lose routine if third number outside the first two (210), congratulates player and increments money (220 to 240), consoles player and takes money away (lines 250 and 260).

Line 270: Checks to see if money is above \$1 after the last round, and if it is not, sends the VIC to the bankruptcy routine starting at 310.

Line 280: Delay loop to allow player to absorb the result of the round.

Lines 290 to 300: This is an attractive visual routine which you may want to use in other programs. Line 290 PRINTs a line, and lines 292 and 298 select a spot on the screen and a colour at random and POKEs into the display file at this location with this colour. There is a very short pause (line 299), and loop is run again. The PRINT in line 290 means the screen scrolls up as the coloured blips appear.

Lines 305: Starts another round of the game.

Lines 310: to 330: This is the end of game routine which prints THE GAME IS OVER!! then an endless series of YOU ARE BROKE messages.

## Suggestions for improvement:

- Use as GETA\$ routine in place of line 150, with a counter to force the player to decide quickly, with a momentary penalty if the decision is not made in time.
- Add a fanfare for a win, and a raspberry noise for a loss, with a super raspberry for bankruptcy.

- Add some 'chirping birds' (see the VIC manual) during the colourful interlude between rounds of the game.
- Make the amount of the win and loss change randomly from round to round, telling the player before she makes her bet how much a win and a loss is worth.

```

10 REM TIGHT SQUEEZE
20 D=20
25 PRINT"█":REM CLEAR SCREEN
30 A=INT(RND(1)*13)+1
40 B=INT(RND(1)*13)+1
50 IF ABS(B-A)<2 THEN 30
60 C=INT(RND(1)*13)+1
70 IFA=C OR B=C THEN 60
80 PRINT"MY FIRST NUMBER IS":A
90 PRINT"MY SECOND IS":B
100 PRINT
120 PRINT"YOU HAVE $":D:"█"
125 PRINT
130 PRINT"HOW MUCH DO YOU BET"
135 PRINT"MY NEXT NUMBER LIES"
137 PRINT" BETWEEN":A:"AND":B:
150 INPUT E
160 IFE>D THEN 150
170 IFE<1 THEN PRINT"NO BETS PERMITTED!"
180 FORZ=1TO999:NEXTZ
190 PRINT"MY NUMBER IS":C
200 IF E<1 THEN 290
210 IF NOT (C>A AND C<B OR C<A AND C>B) THEN 250
220 PRINT"WELL DONE"
225 PRINT"YOU WIN $":2*E
230 D=D+2*E
240 GOTO 280
250 PRINT"SORRY, YOU LOSE $":E:"█"
260 D=D-E
270 IF D<1 THEN 310
280 FORZ=1TO2000:NEXTZ
290 FORZ=1TO24:PRINT
292 L=INT(RND(1)*500)+1
294 C=INT(RND(1)*8)+1
296 POKE 7680 + L,160
298 POKE 38400+L,C
299 FORX=1TO50:NEXTX
300 NEXTZ
305 GOTO25
310 PRINT"THE GAME IS OVER!!█"
320 PRINT"YOU ARE BROKE ";
325 FORZ=1TO999:NEXTZ
330 GOTO320

```



# Time Guardian

In this challenging game written by Adam Burbidge of Crawley you have to recover the six parts of the key of time. The ship starts with 700 energy points, and you lose five points for each move.

When you first run it, you'll see the message I AM CREATING A GALAXY while the VIC sets up the universe for your game. After a brief delay, the screen will clear, and it is Decision Time. Every so often the VIC will ask you to set co-ordinates, and then it will print:

QUADRANT?	You enter a number from 0 to 6
SECTOR?	You enter another number from 0 to 6

This is repeated. Then it will print:

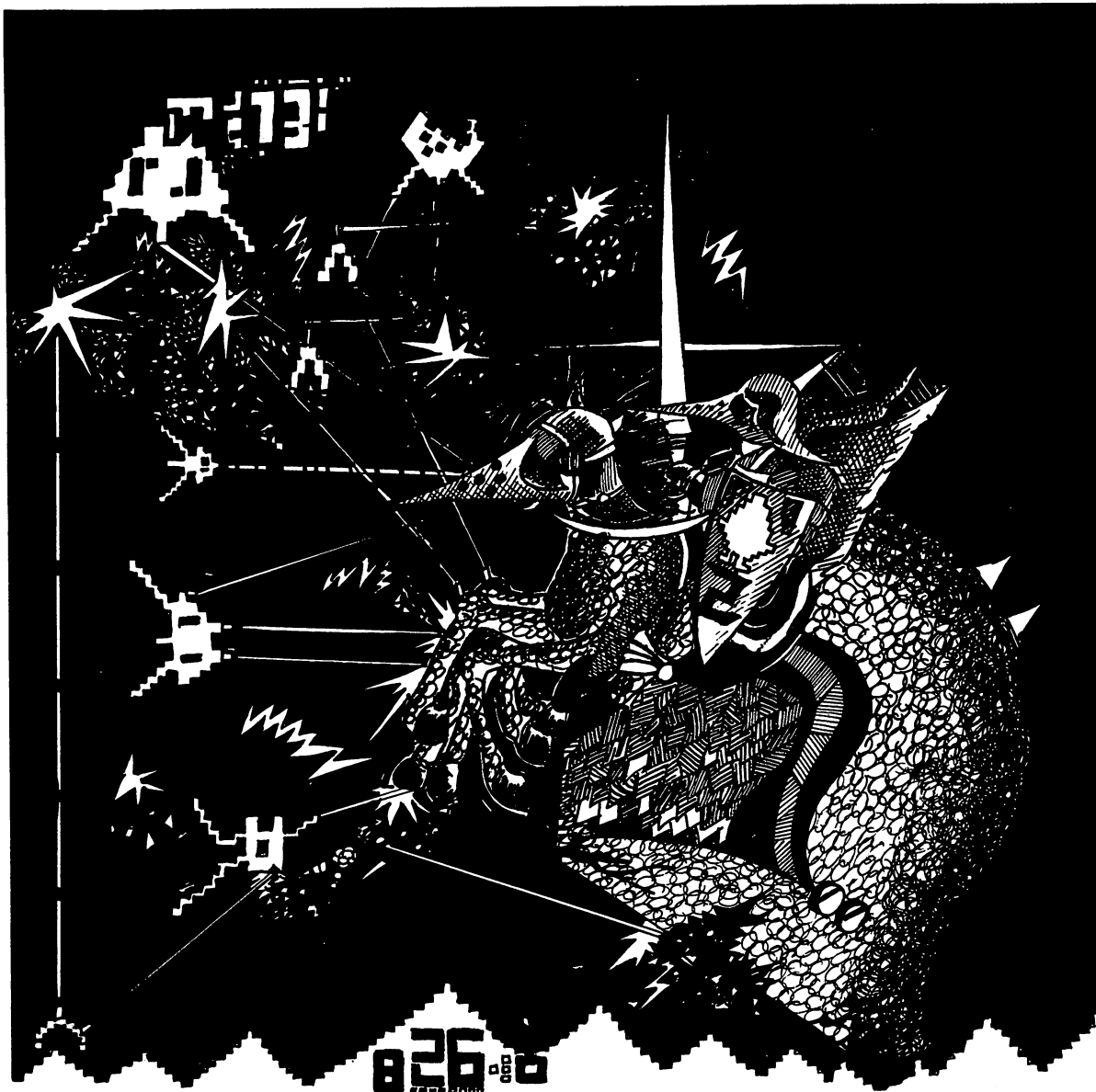
TIME?	You enter either 0 or 1
-------	-------------------------

If you land on a hostile planet, the VIC will print SHIP UNDER ATTACK, then SHIP ENERGY . . . and a number. You need to press any key (which you may have to do several times rapidly) to escape from the hostile planet.

From time to time you'll find part of the 'key of Chronos', the point of the whole game. You must find all six parts of it to win, and you must find them before your ship's energy is exhausted.

```
3 REM TIME GUARDIAN
4 REM BY ADAM BURBIDGE
5 DIMK$(4),Z$(1),A$(6,6,6,1)
6 K$(0)=700:F=75
```





```

10 PRINT"J":REM CLEAR SCREEN
20 PRINT"MI AM CREATING A GALAXY"
30 B=INT(RND(1)*6)
40 C=INT(RND(1)*6)
50 D=INT(RND(1)*6)
60 E=INT(RND(1)*2)
70 A%(B,C,D,E)=2
75 F=F-1:IFF<0 THEN 85
80 GOTO30
85 PRINT"J":REM CLEAR SCREEN
90 GN=INT(RND(1)*2)+1
100 PRINT"YOU START AT GLODNOB"
105 PRINT
110 PRINT"QUADRANT 5"
115 PRINT

```

```

120 PRINT"SECTOR 3,4"
125 PRINT
130 PRINT"TIME"GN*1000"EARTH YEARS"
135 PRINT
140 PRINT"SET CO-ORDINATES"
150 INPUT"QUADRANT";G
160 INPUT"SECTOR";H
165 PRINT" "
170 INPUT"SECTOR";I
180 INPUT"TIME";J
185 K%(3)=K%(3)-5
190 IFA%(G,H,I,J)=1 THEN PRINT"YOU ARE ON GLODNOB":GOTO90
200 IFA%(G,H,I,J)>1 THEN 300
210 PRINT"DEEP SPACE":GOTO140
300 PRINT"YOU ARE ON A PLANET"
310 PRINT"QUADRANT"G
320 PRINT"SECTOR"H,I
330 PRINT"TIME"J*INT(RND(1)*7)
340 K%(1)=INT (RND(1)*20)+1
350 IFK%(1)>5 THEN 370
360 PRINT"UNINHABITED":GOTO140
370 IFK%(1)>10 THEN 400
380 PRINT"INHABITANTS HOSTILE":GOTO500
400 PRINT"PART OF THE KEY OF"," CHRONOS "
410 K%(2)=K%(2)+1
420 PRINT"YOU NOW HAVE"K%(2)"PARTS","OF THE KEY"
430 IFK%(2)=6 THEN PRINT"YOU HAVE WON!":END
440 GOTO140
500 GET Z%(1)
510 IF Z%(1)=""THEN540
520 GOTO140
540 PRINT"SHIP UNDER ATTACK!"
550 K%(3)=K%(3)-INT(RND(1)*50)+1
560 PRINT"SHIP ENERGY:"K%(3)
565 IFK%(3)<1 THEN PRINT"SHIP DESTROYED":END
570 FORT=1T0200:NEXT
580 GOTO500

```

# Long John Silver

This is a very simple program which you can use as the core of any program when you want to hide something on a grid. In this case the grid is 10 × 10, and after each guess you are given feedback as to where the gold is hidden.

## Structure of the program:

Lines 10 and 20: 'Hide' the gold.

Line 30: Loop to count guesses

Line 60: Accepts player guess, strips it to two numbers to 'process' it.

Lines 130 to 190: Feedback on the accuracy of the guess.

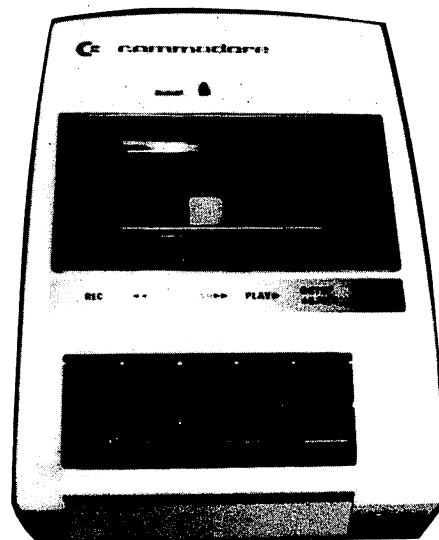
Lines 210 to 220: End of game if not guessed.

Lines 230 to 260: End if the treasure is found.

### Suggestions for improvement:

- Change the size and shape (triangular?) of the grid.
- Add some ambiguity to the feedback.
- Use sound for the feedback (high notes for close, low notes for far away).
- Add a sound routine to the win routine.

```
7 POKE 36879, 15
8 PRINT"J"
10 A=INT(RND(1)*10)+1
20 B=INT(RND(1)*10)+1
30 FORZ=1TO10
35 PRINT"II":PRINT
40 PRINT"YOU HAVE ONLY"
45 PRINT10-Z;"SECONDS LEFT!"
50 PRINT"WHERE IS THE GOLD";
60 INPUTM:C=INT(M/10):D=M-C*10
70 IFA=C AND B=D THEN 230
130 PRINT:PRINT"IT IS NOT AT";C;D
135 PRINT
140 PRINT"HERE IS A CLUE:--"
150 PRINT"▲TRY TO THE ";
160 IF A>C THEN PRINT"▲SOUTH▲";
170 IF A<C THEN PRINT"▲NORTH▲";
180 IF B<D THEN PRINT"▲WEST▲"
190 IF B>D THEN PRINT"▲EAST▲"
200 NEXTZ
210 PRINT:PRINT"TIME IS UP"
215 PRINT"THE GOLD WAS AT";A;B
220 END
230 PRINT"WEEL! WEEL! WEEL! WEEL!"
240 S= RND(1)*10000
245 PRINT"!"
250 PRINT"YOU FOUND £";INT(S/2);
255 FORT=1TO555:NEXTT
260 GOTO 250
```



# Robot Nim

The VIC prints a number of odd triangle shapes, tells you how many you can take, then takes a few of the shapes itself. This fascinating process continues until there is only one left. At this point the player who must take the last one loses.

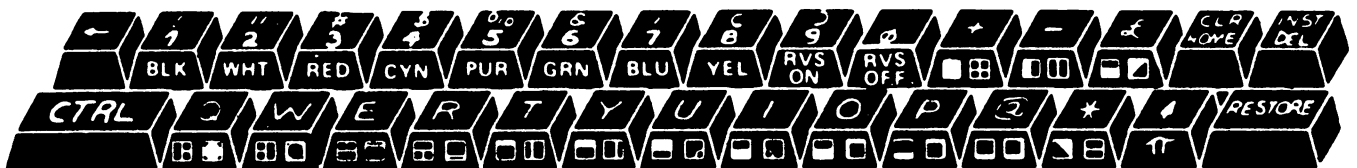
## Structure of the program:

- Line 20: Determines the number of objects.
- Line 50: Determines the maximum number to be taken.
- Lines 100 to 130: Print out the correct number of triangles, starting new lines at random (see line 120).
- Lines 210 to 215: Determine how many the 'robot' will take. The random bit at the end of line 210 ensures that the robot makes mistakes from time to time. Line 215 ensures that the mistake is not so large that the robot breaks the rules.
- Lines 280 to 290: Place a coloured border between rounds of the game. Design this to suit yourself.

```

10 REM ROBOT NIM
20 M=0:E=0:Z=16+INT(RND(1)*8)
30 PRINT"7":REM CLEAR SCREEN
40 IF2*INT(Z/2)=Z THENZ=Z+1
50 H=3+INT(RND(1)*2)
60 PRINT"MAXIMUM TO TAKE"H
70 GOSUB280
80 IF E>0 THEN PRINT"YOU TOOK"E,"ROBOT TOOK"Q
90 PRINT"!"
100 PRINT"█":FORK=1TOZ
110 PRINTK;"█";
120 IF RND(1)>.6 THEN PRINT
130 NEXTK
140 GOSUB280
145 PRINT"HOW MANY WILL","YOU TAKE";
150 INPUTE
160 IF E>H THEN 150
170 Z=Z-E
180 GOSUB280
190 IF Z<1 THEN PRINT"YOU TOOK THE LAST ONE","SO ROBOT WINS!!":END
210 Q=Z-1-INT((Z-1)/(H+1))*(H+1)-INT(RND(1)*2)+INT(RND(1)*2)
215 IF Q<1 OR Q>H THEN 210
220 GOSUB280
230 Z=Z-Q
240 IFZ=0 THEN PRINT"ROBOT TOOK"Q,,,"SO YOU WIN!!":END
270 GOTO60
280 PRINT
285 PRINT"#####"
290 RETURN

```



# Night on a Wild Mountain

This program is perhaps best saved for those people who say: "It's very nice having a personal computer, but what can you do with it?" Once having seen (and heard) this program, they may well be convinced that perhaps they should not have asked. The music is wild and random, as befits the title, although the graphics have symmetry and order. Enter this program just as it is listed here, then try and work on it to bring some order into the music.

```
5 PRINT"J"
10 REM NIGHT ON A WILD MOUNTAIN
12 REM (RANDOM MUSIC,PATTERNS)
15 M=INT(RND(1)*8)
20 A=INT(RND(1)*18)
30 B=INT(RND(1)*18)
40 C=7911
50 D=38631
60 POKEC+A,102:POKED+A,M
70 POKEC-A,102:POKED-A,M
80 POKEC+11*A+B,102:POKED+11*A+B,M
90 POKEC-11*A-B,102:POKED-11*A-B,M
97 IF RND(1)>.3 THEN 120
100 POKE36879,16*(INT(RND(1)*16))+INT(RND(1)*8)+8
120 POKE36878,INT(RND(1)*15)+1
130 POKE36874,INT(RND(1)*128)+128
140 POKE36875,INT(RND(1)*128)+128
150 POKE36876,INT(RND(1)*128)+128
180 POKE36877,INT(RND(1)*128)+128
195 IFRND(1)>.1 THEN205
200 POKE36878,0
205 IFRND(1)>.3 THEN215
210 POKE36874,0
215 IFRND(1)>.3 THEN230
220 POKE36875,0
230 FORT=1TORND(1)*20 +5:NEXT
235 IFRND(1)>.3 THEN250
240 POKE36877,0
250 POKE36876,0
500 GOTO10
```

## Victim

This game is simplicity itself. You choose your 'victim', a number from one to six, and then sit back and watch the VICtim race get underway.

Lines 15 and 55 are interesting. They allow the VIC to assign a different colour to each number, but the same colour to each number when it is printed. You'll see what I mean when you run it. The sound routine, starting at line 1000, may well benefit from your programming skills.



```
5 POKE36879,8
10 REM VICTIM
12 PRINT"J":PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT
15 A$=" "
20 PRINT "  NAME YOUR VICTIM",,,,,,,,,,"M  (1 TO 6)";
30 INPUTW
35 IFW<10RW>6THEN30
40 FORJ=1TO6:B(J)=0:NEXT
50 PRINT"J":REM CLEAR SCREEN
52 PRINT"J":REM HOME
54 FORM=1TO6
55 C$=MID$(A$,M,1)
60 PRINT TAB(B(M));C$ ;M
65 GOSUB1000
70 PRINT
80 B(M)=B(M)+INT(RND(1)+.5)
90 IFB(M)>18THEN120
100 NEXT
110 GOTO52
120 FORZ=MT08
130 PRINT
```

```

140 NEXT
150 PRINT"  END OF RACE      "
160 PRINT
170 PRINT"  THE WINNER IS"
180 IFW=MTHENPRINT"  AND YOU BACKED IT!!":PRINT"WELL DONE"
185 PRINT
190 IFW<MTHENPRINT"  BUT YOU BACKED"
200 PRINT
210 FORJ=1TO800:NEXT
220 PRINT"  PRESS ANY KEY TO"
230 PRINT"  START"
240 PRINT"  A NEW RACE"
250 GETV$
260 IFV$=""THEN250
270 RUN
1000 POKE36878,15
1010 FORQ=1TO  A(M)
1020 POKE36876,180+INT(RND(1)*60)
1030 NEXTQ
1040 POKE36878,0
1070 RETURN

```

# Evolution

In 1970, John Conway, who was then attending Cambridge University, invented the game of LIFE, which rapidly became a computer 'hit' after it was described in the October 1970 issue of *Scientific American*.

LIFE, which simulates the birth, growth and death of a cell colony, produces rather splendid visual effects.

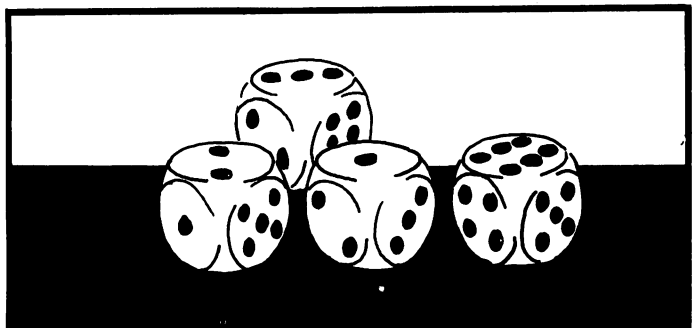
Mr. Conway's rules are simple, but produce unpredictably interesting results. The cells in LIFE are born, live or die in accord with the dictates laid down by the God Conway. According to his writ, each cell has eight neighbours; every cell with two or three neighbours survives to the next generation; if there are three, and only three, neighbouring cells, a new cell is born; and any cell with four or more neighbours dies from overpopulation.

EVOLUTION is a version of LIFE written especially for the VIC. Setting up a black screen with a red border, the program puts cells on a 14 × 14 grid in accordance with the Conway rules. The game as listed is silent, but if you'd like to add a little sound — which tells you how things are going in the program — add the following lines:

```

6      POKE 36878,7
225    POKE 36876,240:POKE 36876,0
1075   POKE 36876,235:POKE 36876,0

```



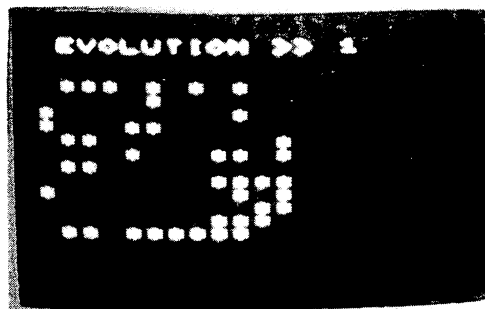
### Structure of the program:

- Line 10: Dimensions the arrays to hold the cells as they evolve.  
Lines 20 to 80: Generate the first 'evolution' of the colony, creating a cell in line 15 if the random number generated is greater than 0.5. The elements of the two arrays are set equal to each other in line 60.  
Line 90: Sends the action to the subroutine which prints out the evolving colony.  
Line 95: Increments the evolutionary count.  
Lines 100 to 200: Count the number of occupied cells around each cell in the colony.  
Lines 210 and 220: Alter the element in the B array in accordance with the findings of lines 100 to 200. Note that the A array is unchanged at this time, so a change due for the next evolution will not interfere with the current evolution being studied.  
Line 250: Do it again, VIC  
Line 1000 to 1090: This routine prints out the colony, updating the A array as it does so.

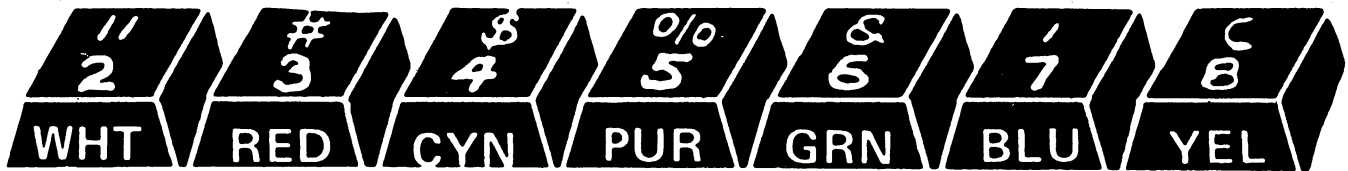
### Suggestions for improvements:

- Change the size of the grid.
- Ensure that each cell is printed in a randomly chosen colour.
- Have each element of the colony give up a little bleep or blurr, depending on whether the element is occupied by a cell or not.
- Add a routine to take the place of lines 20 to 80 to allow you to enter your own starting colony.
- Add a routine (as part of the PRINT subroutine) to count the number of occupied cells, which will automatically RUN the program from the beginning if the number drops below, say, five. This rerun could select a new border and/or screen colour.

```
5 REM EVOLUTION
7 PRINT"0":REM CLEAR          SCREEN
8 PRINT"0"
9 POKE 36879,10:REM RED BORDER, BLACK SCREEN
10 DIMA(14,14),B(14,14)
20 FORX=2 TO 13
30 FORY=2 TO 13
50 IF RND(1)>0.5 THEN A(X,Y)=1
60 B(X,Y)=A(X,Y)
70 NEXTY
80 NEXTX
90 GOSUB1000
95 G=G+1
100 FORX=2TO13
110 FORY=2TO13
120 C=0
130 IF A(X-1,Y-1)=1 THEN C=C+1
140 IF A(X-1,Y)=1 THEN C=C+1
150 IF A(X-1,Y+1)=1 THEN C=C+1
160 IF A(X,Y-1)=1 THEN C=C+1
170 IF A(X,Y+1)=1 THEN C=C+1
180 IF A(X+1,Y-1)=1 THEN C=C+1
190 IF A(X+1,Y)=1 THEN C=C+1
200 IF A(X+1,Y+1)=1 THEN C=C+1
210 IF A(X,Y)=1 AND C<2 AND C<3 THEN B(X,Y)=0
```







```

220 IF A(X,Y)=0 AND C=3 THEN B(X,Y)=1
230 NEXT Y
240 NEXT X
250 GOTO 90
999 END
1000 PRINT "Z": REM HOME
1003 PRINT "EVOLUTION >>"; G: "M": REM WHITE, YELLOW
1005 PRINT
1010 FOR X=1 TO 14
1020 FOR Y=1 TO 14
1030 A(X,Y)=B(X,Y)
1040 IF A(X,Y)=1 THEN PRINT "*";
1050 IF A(X,Y)=0 THEN PRINT " ";
1060 NEXT Y
1070 PRINT
1080 NEXT X
1090 RETURN

```

## Vic-et-un

In this program you and the VIC (with thunderstorms, lightning bolts and other distractions) take it in turns to roll a dice trying to get a total as close as possible to—or equal to—21, without going over 21. This game is a dice version of Blackjack.

It is very simple to play. After pressing RUN, you'll be told to touch the "Z" key to roll the dice, the "M" key to stand, that is, to stay with the total you now have. Your total will appear, and the choice to roll or stand again. Once you've decided to stand, the VIC will start to roll, and will—in two games out of three, on average—beat you.

### Structure of the program:

Line 10: Sets the counter for the human (H) and computer (C) scores.

Line 20: Sends action to the wild and crazy subroutine which selects colours and sounds randomly.

Lines 30 to 80: Accepts and acts on the player's decisions.

Lines 90 to 130: Computer decides whether to add to its total or stand.

Lines 140 to 250: Decides who has won, creates some more mayhem, starts a new game.

Line 260: Delay loop, called various times during the program.

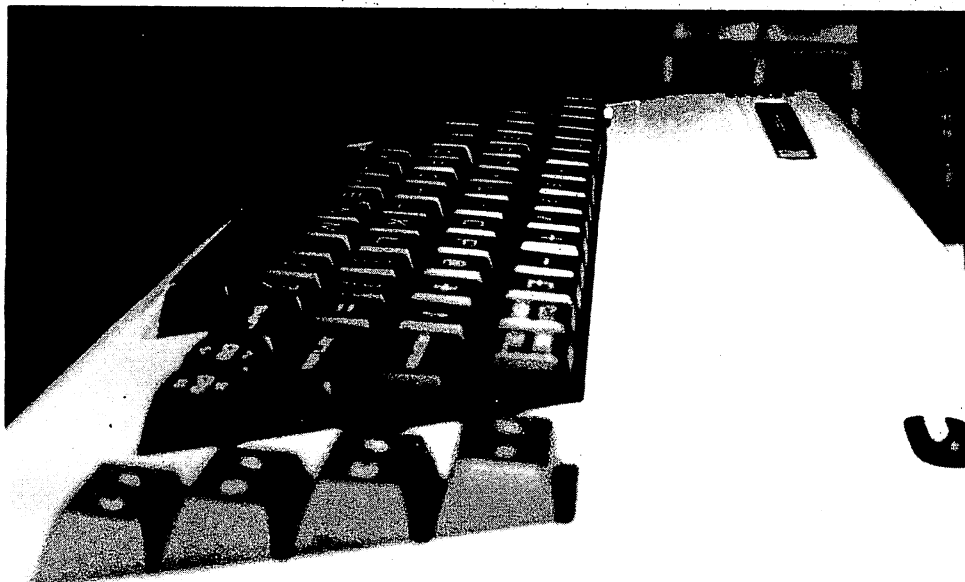
Line 990: Assigns A\$.

Lines from 1000: Selects an element from A\$ to change the colour, then does some quite exciting things with the colour and sound.

```

5 REM VIC-ET-UN
7 PRINT "Z": REM CLEAR SCREEN
10 H=0: C=0

```



```
20 GOSUB990
30 PRINTB$;" ENTER Z TO ROLL":GOSUB1000:PRINTB$;" M TO STAND"
35 GETM$: IFM$="" THEN35
40 IFM$="M" THEN90
50 H=H+INT(RND(1)*6)+1
60 GOSUB260:GOSUB1000
70 PRINT:PRINTB$;" YOUR TOTAL IS"H
75 GOSUB260:GOSUB260:PRINT
80 GOTO30
90 IFC>H AND C<22 OR C>21 OR H>21 ORH=21 ANDC=21 THEN 140
100 C=C+INT(RND(1)*6)+1
110 GOSUB260
115 PRINT:PRINT
120 GOSUB1000:PRINTB$;" MY TOTAL IS"C
130 GOTO90
140 GOSUB1000:PRINTB$;
150 GOSUB260:GOSUB1000:GOSUB260
170 IFH=COR(H>21ANDC>21) THEN240
175 PRINT:PRINT:PRINTB$;
180 IF(C>H ORH>21)ANDC<22 THENPRINT,"I";
190 IF(C<HORC>21)ANDH<22 THENPRINT,"YOU";
200 GOSUB1000:PRINTB$;" WIN!!"
210 GOSUB260
220 GOSUB1000
225 FORJ=1TO7:GOSUB260:NEXT
226 GOSUB1000
230 PRINT"J":RUN
240 GOSUB1000:PRINTB$;"DEAD HEAT, BUDDY!"
250 GOTO225
260 FORE=1TO500:NEXT
270 RETURN
990 A$="ABCDEFGHIJKLMNOPQRSTUVWXYZ"
1000 B$=MID$(A$, (INT(RND(1)*7)+1), 1)
```

```

1010 FORJ=1TOINT(RND(1)*10)+1
1020 POKE36878,INT(RND(1)*10)+6
1030 FORK=1TOINT(RND(1)*7)+2
1040 POKE36876,K+180-INT(RND(1)*30)
1050 NEXTK,J
1070 POKE36879,INT(RND(1)*3)+28:POKE36879,8
1075 POKE36879,INT(RND(1)*3)+28
1080 POKE36879,INT(RND(1)*3)+28
1090 POKE36878,0
1100 RETURN

```

# Hangman

This game needs two players, one to enter a word of her choice and the other player to attempt to guess the word. The VIC draws a dash for each letter, and then changes this into any letter which has been guessed correctly.

## Structure of the program:

Line 50: Sets up arrays if needed.

Lines 100 to 130: Accepts the secret word, a letter at a time.

Line 135: Counts for the 10 guesses.

Lines 145 to 170: Select colours at random using the subroutine from 9010, prints the letter if it has been guessed, if not prints a dash.

Lines 210 to 260: Accepts a guess and compares it, letter for letter with the secret word.

Line 270: Sends control to winning message if word is guessed.

Line 300 to 330, then from 1045: Losing message, reveals word.

Lines 1055 to 1100: Offer new game. If not accepted rePRINTs OK, THANKS FOR PLAYING in different colours, over and over again.

Routine from 5000: Adds some sound to brighten things up.

Routine from 9000: Assigns the colour controls to string A\$, and then when subsequently called (as GOSUB 9010) changes the next thing to be printed to a random colour. This subroutine also calls the sound subroutine, then flashes (line 9025) giving the border a random colour.

## Suggestions for improvement:

- Get the program to draw a hanged man, part by part, as the number of guesses is used up.
- Store a number of words in a DATA statement, so the VIC can choose its own words.
- Note that the random colour choice, the sound routine from 5000 and the random border flash are all effective aids to add to your own programs to brighten them up.

```

10 REM HANGMAN
20 PRINT"J":GOSUB9000
30 INPUT"HOW MANY LETTERS":N
50 IFN>10 THEN DIM B(N),D(N)
100 FORA=1TON:INPUTC$
120 B(A)=ASC(C$):D(A)=B(A)
130 NEXT

```

```

135 FORJ=1TO10:PRINT"J"
140 PRINT:PRINT:PRINT
145 FORE=1TON
150 GOSUB9010:PRINTB$;
155 IFB(E)=D(E) THEN PRINT"-";
160 IFB(E)<>D(E)THEN PRINT CHR$(B(E));
170 NEXTE
180 PRINT:PRINT
190 H=0
200 GOSUB9010:PRINTB$; "ENTER GUESS NO."J
210 INPUTC$
220 F=ASC(C$)
230 FORG=1TON
240 IFD(G)=F THEN D(G)=0
250 IFD(G)=0THEN H=H+1
260 NEXTG
270 IFH=NTHEN 1000
280 NEXTJ
290 PRINT
300 GOSUB9010:PRINT"SORRY, TIME IS UP"
310 PRINT
320 GOSUB9010:PRINTB$;"THE WORD-WAS ";
330 GOTO1045
1000 REM WIN
1010 PRINT
1020 GOSUB9010:PRINTB$;"YOU GOT IT IN"J
1040 PRINT
1045 FORQ=1TON:PRINTCHR$(B(Q));:NEXT
1050 PRINT
1055 GOSUB9010:PRINTB$;"ANOTHER GAME";
1060 INPUTC$
1070 IFASC(C$)=ASC("Y")THEN RUN
1080 GOSUB9010:PRINTB$;"OK, THANKS FOR"
1090 GOSUB9010:PRINTB$;"PLAYING!"
1095 FORT=1TO300:NEXT
1097 PRINT
1100 GOTO1080
5000 REM SOUND
5010 POKE36878,INT(RND(1)*8)+8
5020 FORT=1TO100STEP(INT(RND(1)*8)+1)
5030 POKE36876,240-T
5040 POKE36877,T
5060 NEXT
5070 POKE36876,0
5080 POKE36877,0
5090 RETURN
8990 END
9000 A$="██████████"
9010 B$=MID$(A$,INT(RND(1)*7)+1,1)
9020 GOSUB5000
9025 POKE36879,INT(RND(1)*6)+26
9030 RETURN

```

# Codebreaker

The game Mastermind is copyright Invicta, who sell a number of versions of the game which use coloured pegs. Invicta bought the rights to the game from an amateur mathematician, Mordechai Meirovich, in 1971, and a couple of years after they first marketed it, had a world-wide best selling game.

The game has been known in England for centuries as Bulls and Cows. Another popular version is called Codebreaker.

The principle is simple. The VIC20 picks a three-digit code (such as 259), using the number 1 to 9. Zero is not used, and no digit is used more than once in the code (so 117, 494 or 666 are impossible). You have to guess the number in 10 guesses or less. The feedback from your VIC is fairly easy to interpret. After each guess you are told YOU SCORED 2 BLACKS and 0 WHITES, in which a 'black' is a correct digit in the correct place in the three-digit code, and a white is a digit which does appear in the code, but not where you put it in your guess. The computer prints out the answer if you fail to get it within 10 guesses.

## Structure of the program:

Lines 30 to 50: Generate three random numbers between one and nine.

Line 60: Checks to ensure all numbers are different. If they are not, sends VIC back to the routine 30 to 50 again to create three more.

Line 70: Turns the three separate digits into one three-digit number.

Lines 80 and 330: Control the 'guess loop'.

Line 90: Prints number of the guess.

Line 95: Accepts the player's guess.

Lines 100 to 120: Splits the player's guess into three separate digits so they can be compared, item by item, with the computer's numbers.

Line 130: Compares the two three-digit numbers. If they are the same (i.e. if D equals X) then the VIC goes to the win routine starting at line 360.

Line 150: Sets the counters for black (N) and white (W) to zero.

Lines 170 to 210: Looks for blacks. If it finds one (that is, if it finds a correct digit in a correct position) it increments N by one (lines 190) and changes that element of the original number (A(1), A(2) or A(3)) to a zero, so it will not be rechecked in the 'white routine'.

Lines 220 to 280: Check for 'whites', incrementing W by one each time one is found.

Line 290: Reconstructs the computer's number from D, restoring elements turned to zero in line 200.

Lines 320 to 325: Print out the player's score.

Lines 340 to 350: This is only used if the player is unable to guess the code in 10 guesses.

Lines 360 to 380: This is the win routine.

## Suggestions for improvement:

- Reduce the number of guesses once you've mastered the game (six is a good number).
- Change the game so it selects colours, using a numerical code to (a) print blobs of colour, and (b) to accept player input.
- Add sound so a particular effect comes each time the player gets a black, with another effect for a white.
- Add a wild, flashing, noisy end if the player guesses the code correctly.

```

10 PRINT"J"
30 FORZ=1TO3
40 A(Z)=INT(RND(1)*9)+1
50 NEXTZ
60 IFA(1)=A(2)OR A(1)=A(3)OR A(2)=A(3) THEN30
70 D=100*A(1)+10*A(2)+A(3)
90 FORC=1TO10
95 PRINT"GUESS ";C;
95 INPUTX
100 B(1)=INT(X/100)
110 B(2)=INT((X-100*B(1))/10)
120 B(3)=X-100*B(1)-10*B(2)
130 IFD=X THEN360
150 N=0:W=0
170 FOR E=1 TO 3
180 IFA(E)↔B(E) THEN 210
190 N=N+1
200 A(E)=0
210 NEXT E
220 FORF=1TO3
230 IFA(F)=0 THEN 280
240 FOR E=1 TO 3
250 IFB(F)↔A(E) THEN 270
260 W=W+1
270 NEXT E
280 NEXT F
290 A(1)=INT(D/100)
300 A(2)=INT((D-100*A(1))/10)
310 A(3)=D-100*A(1)-10*A(2)
320 PRINT"YOU SCORED"
325 PRINT"■";N;"BLACKS &■";W;"WHITES■"
330 NEXT C
340 PRINT"MY NUMBER WAS",A(1);A(2);A(3)
350 END
360 PRINT"CONGRATULATIONS"
370 PRINT"YOU GOT IT IN";C
380 END

```

# Symphony for a Melancholy Computer

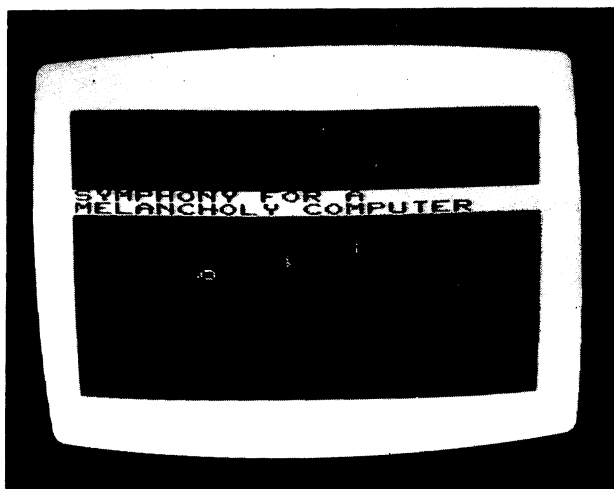
This piece reflects an effort to write a program which would 'write music' that had some underlying form. The title is obvious and appropriate, once you've heard the computer's output from this program.

The main structure of the music comes from the variables A, B, C, D, E and F which are defined on each run. The program is designed so that the chords change with reference to a measure (E) and so that the changes overlap each other, thus getting rid of harsh stops and starts.

```

10 REM SYMPHONY FOR
15 REM A MELANCHOLY
16 REM COMPUTER
18 GOSUB1000
20 A=128+INT(RND(1)*128)
30 B=128+INT(RND(1)*128)
40 C=128+INT(RND(1)*128)
50 D=128+INT(RND(1)*128)
60 E=INT(RND(1)*4)+1
70 F=2*E
75 POKE36878,F-1
90 FORH=1TO5*E
100 POKE36874,A
110 NEXTH
120 FORH=1TO5*E
130 POKE36875,B
140 NEXTH
150 FORH=1TO5*E
160 POKE36876,C
170 NEXTH
180 FORH=1TO5*E
190 POKE36877,D
200 NEXTH
210 FORH=1TO2*E
220 POKE36874,A
230 NEXTH
240 FORH=1TO5*E
250 POKE36876,C
260 NEXTH
500 RUN
1000 PRINT"J":REM CLEAR
1010 POKE36879,16*(INT(RND(1)*16))+(INT(RND(1)*8))+8
1020 RETURN

```



# Symphony for a Melancholy Computer with Zen Show

This is the same program as just listed, with an underplayed visual display added.

```

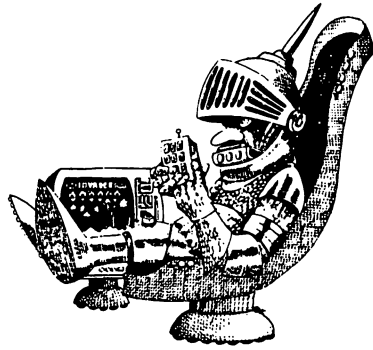
10 REM SYMPHONY FOR
15 REM A MELANCHOLY
16 REM COMPUTER
17 REM WITH ZEN SHOW
18 GOSUB1000
20 A=128+INT(RND(1)*128)
30 B=128+INT(RND(1)*128)
40 C=128+INT(RND(1)*128)
50 D=128+INT(RND(1)*128)

```

```

60 E=INT(RND(1)*2)+1
70 F=2*E
75 POKE36878,F-1
90 FORH=1TO5*E
100 POKE36874,A
110 NEXTH
120 FORH=1TO5*E
130 POKE36875,B
140 NEXTH
150 FORH=1TO5*E
160 POKE36876,C
170 NEXTH
180 FORH=1TO5*E
190 POKE36877,D
200 NEXTH
210 FORH=1TO2*E
220 POKE36874,A
230 NEXTH
240 FORH=1TO5*E
250 POKE36876,C
260 NEXTH
500 RUN
1000 PRINT"7":REM CLEAR
1010 POKE36879,16*(INT(RND(1)*16))+(INT(RND(1)*8))+8
1020 FORJ=1TO5
1030 PRINT
1040 NEXT
1050 PRINT"SYMPHONY FOR A          MELANCHOLY COMPUTER  "
1060 PRINT
1065 FORJ=1TORND(1)*20:PRINT" ";:NEXT
1070 PRINT CHR$(119+INT(RND(1)*15))
1075 FORJ=1TORND(1)*20:PRINT" ";:NEXT
1080 PRINT CHR$(119+INT(RND(1)*15))
1085 FORJ=1TORND(1)*20:PRINT" ";:NEXT
1090 PRINT CHR$(119+INT(RND(1)*15))
1095 FORJ=1TORND(1)*20:PRINT" ";:NEXT
1100 PRINT CHR$(119+INT(RND(1)*15))
1110 RETURN

```



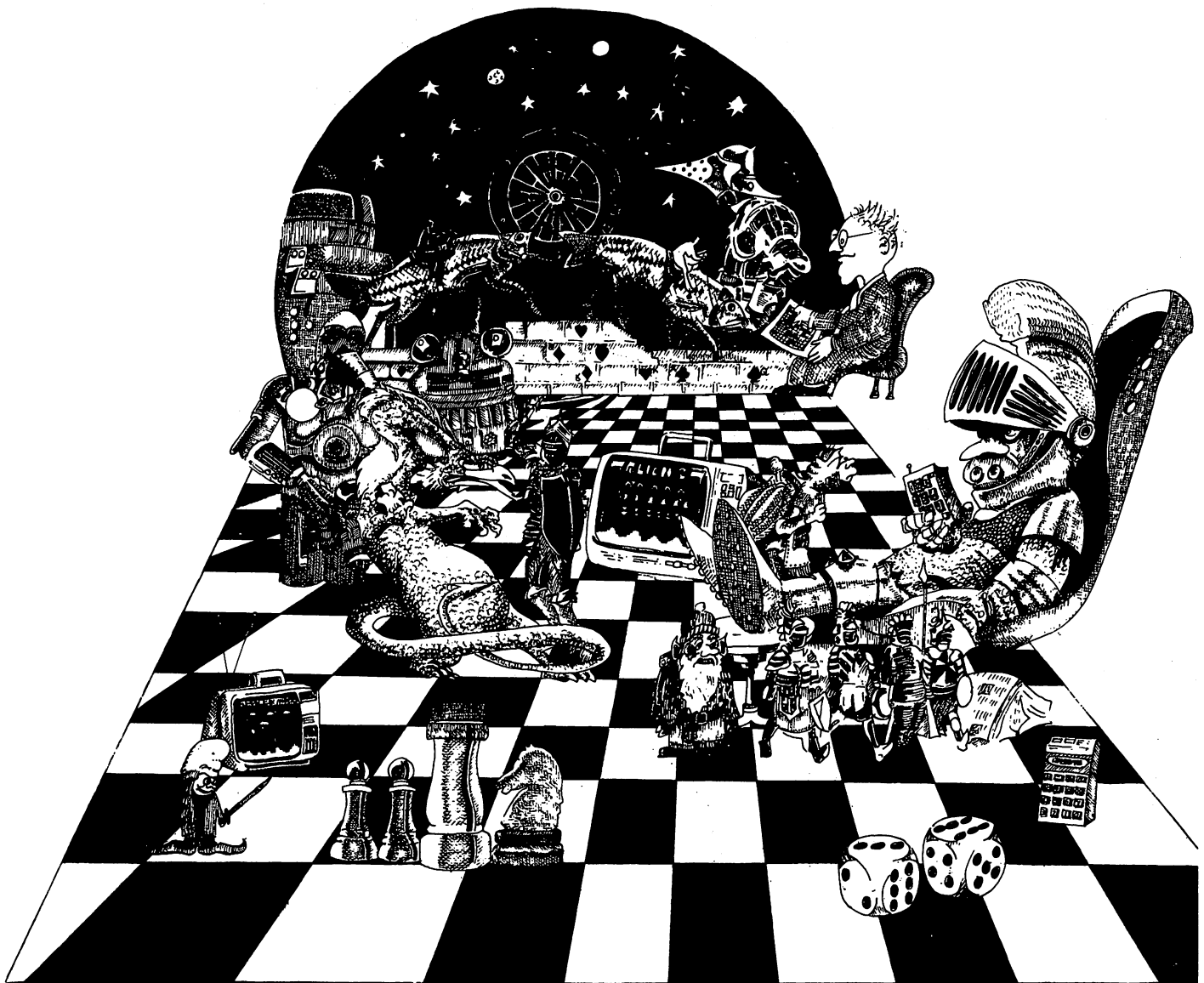
# Fairway

In this game, you are on a nine hole golf course. The length of each hole varies each time you play the game. The program makes much use of POKEing to create the green, and move the ball. The sound the ball makes is particularly interesting if you overshoot the hole.

There is no need for me to explain how the program works, as it is generously provided with REM statements.



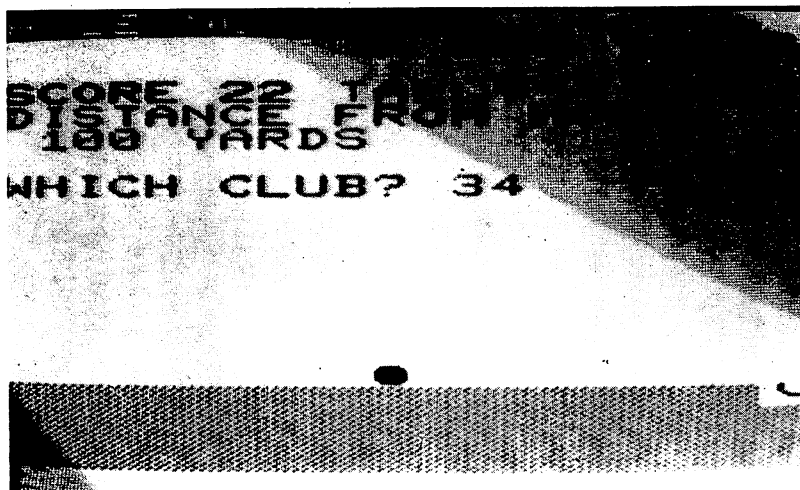
```
10 REM FAIRWAY
15 POKE36879,28
20 SC=0:REM SCORE
30 AV=0:REM AVERAGE
100 FORA=1TO9:REM NO. OF HOLES
105 T=0:REMTALLY THIS HOLE
110 D=INT(RND(1)*7)+14:REM DISTANCE TO HOLE
120 PRINT"J":REM CLEAR SCREEN
125 C=0
130 M=0
400 GOSUB6000
500 GOSUB5000
510 IFM<>D THEN 500
520 IFABS(M-D)<2 THEN 8000
```



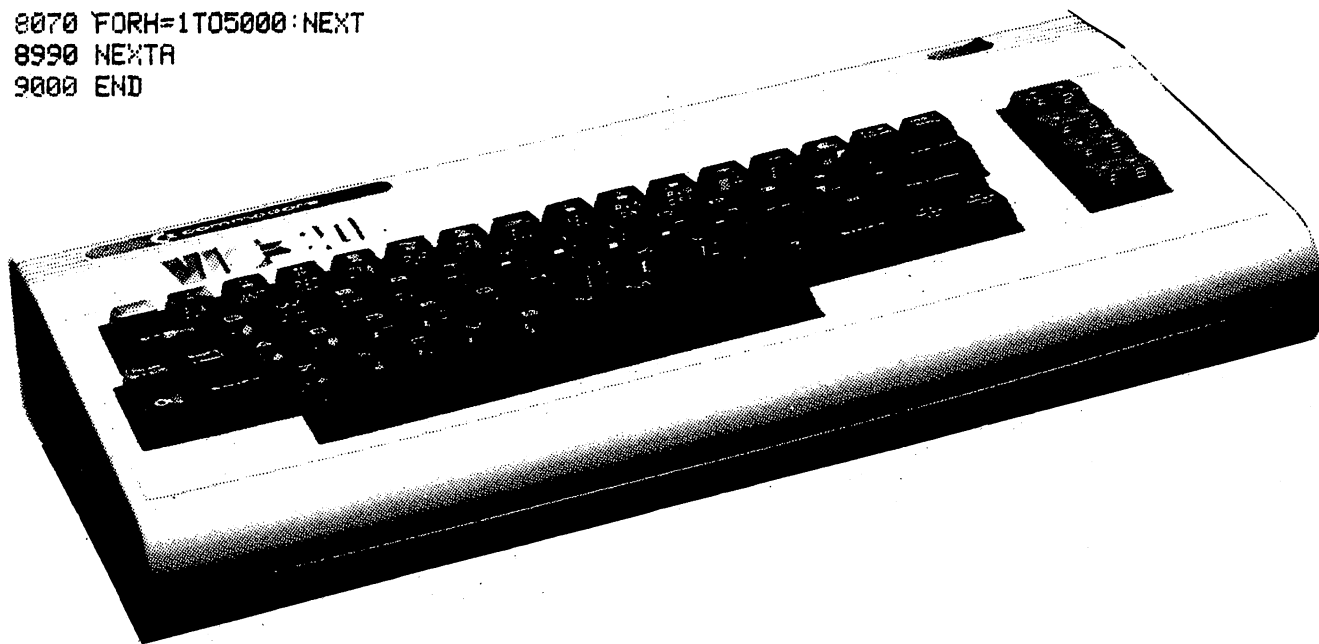
```

525 IFM>21 M=21
530 GOT0500
540 END
5000 PRINT "HOLE NUMBER" A
5005 PRINT, D*10"YARDS"
5010 PRINT
5012 PRINT"SCORE" SC"TOTALY" T
5015 IFD=M THEN 8000
5020 PRINT"DISTANCE FROM HOLE:"
5025 IF D-M=>10 THEN PRINT"(D-M)*10"YARDS "
5026 IF D-M< 10 THEN PRINT" "(D-M)*10"YARDS "
5030 PRINT"
5040 INPUT"WHICH CLUB";C
5042 T=T+1
5044 GOSUB7000
5045 POKE38730+M,1
5047 IFM>D THENC=-C
5060 M= INT(M+C/3*RND(1+1)) WHICH CLUB? 34
5065 C=0
5070 POKE8010+M,81
5080 POKE38730+M,2
5090 RETURN
5999 END
6000 REM DRAW GREEN
6010 FORQ=8032T08119
6020 POKEQ,102
6030 POKEQ+38752-8032,5
6040 NEXT Q
6050 POKE8032+D,74:POKE8033+D,75
6060 POKE38752+D,2:POKE38753+D,2
6065 POKE8010+M,81
6070 POKE38730+M,2
6100 RETURN
7000 FORW=128T0180+3*M
7005 POKE36878,15
7020 POKE36875,W
7030 POKE36874,W
7040 NEXTW
7050 POKE36875,0
7060 POKE36874,0
7500 RETURN
8000 T=T-1
8002 POKE36876,220
8003 FORP=1T05:NEXT
8004 POKE36876,0:POKE36876,225:POKE36876,0
8010 PRINT"YOU GOT IT IN" T
9020 POKE8010+M,1
9030 POKE8032+M,81
9040 POKE38774+M,2
9050 POKE8033+M,102
9060 POKE38775+M,5
9062 SC=SC+T
9065 PRINT" AVERAGE" INT(SC/A+.5)

```



```
8070 FORH=1TO5000:NEXT
8990 NEXTA
9000 END
```



# Jelly Bean Space Swarm

In Adam Burbidge's program, you are the navigator on a starship. Suddenly you find yourself embroiled in an asteroid storm. Only you can Save The Ship From Destruction.

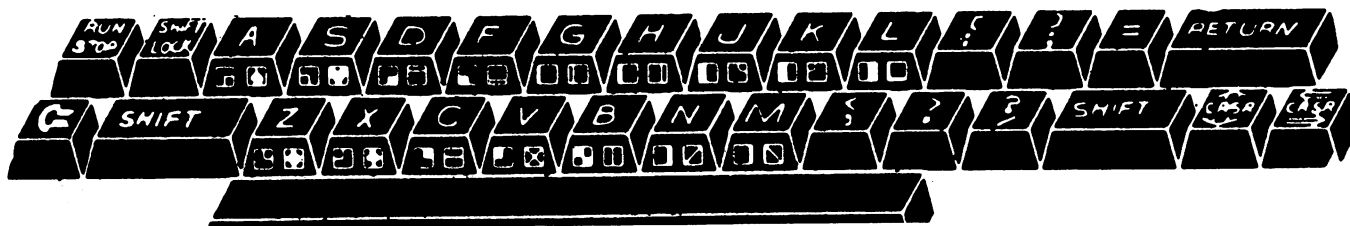
You are the purple checkerboard in the left hand corner of the screen. As you'll see when you run it, the asteroids appear at different points. By using your two controls (4-left, 6-right) you have to steer out of the way of the asteroids (which look somewhat like jellybeans, hence the title). The pressure increases as the game continues. The number of asteroids increases, and their colour changes.

```
1 REM JELLYBEAN SPACE SWARM
2 REM BY ADAM BURBIDGE
3 REM STANDARD MEMORY ONLY
4 SC=0:HS=0
5 PRINT"J":REM CLEAR SCREEN
10 FORJ=1TO20:PRINT:NEXT
11 POKE36879,255
40 POKE7746,102
43 B=38466
45 POKE38466,4
50 FORT=1TO300:NEXT
60 A=7746
65 POKEA,32
70 GET A$:IF A$="4" THEN A=A-1:B=B-1
71 IFA$="6" THEN A=A+1:B=B+1
72 POKE(A-23),32
73 POKE(A-21),32
74 POKE(A-22),32
75 POKEA,102
76 POKEB,4
```

```

77 FORT=1T0100:NEXT
78 IFPEEK(A+22)=81 THEN 200
79 SC=SC+1
80 X=INT(RND(1)*506)+7680
89 POKEY+30720,6
90 POKEY,81
93 IF SC>400 THEN 500
95 IF SC>300 THEN GOSUB 400
96 IF SC>200 THEN GOSUB 350
100 PRINT
110 GOTO65
200 POKE 36877,220
210 FORL=15T00 STEP -1
220 POKE 36878,L
230 FORM=1T0300
240 NEXTM
250 NEXTL
260 POKE 36877,0
270 POKE36878,0
280 PRINT"SHIP DESTROYED!!!!"
285 PRINT"SCORE=";SC
286 IF SC>HS THEN PRINT"HIGH SCORE=";SC:HS=SC
287 IF SC<HS THEN PRINT"HIGH SCORE=";HS
290 FORT=1T07000:NEXT
295 SC=0
300 GOTO 5
350 Y=INT(RND(1)*506)+7680
360 POKEY,81
370 POKEY+30720,2
380 RETURN
400 D=INT(RND(1)*506)+7680
410 POKED,81
420 POKED+30720,5
430 RETURN
500 PRINT"WELL DONE, YOU'VE"
510 PRINT"SUCCESSFULLY NAVIGATED THROUGH"
520 POKE36878,13
530 POKE36876,135
540 FOR O=241 TO 135 STEP-1
550 FORM=1T0100
555 POKE36876,0
560 NEXTM
570 NEXTO
580 POKE36876,0
590 POKE36878,0
600 END

```



# Superpoet

The VIC turns into Wordsworth, cranking out some splendid poems, and a few which are not so brilliant. Once you've seen it in action, change the words in the subroutines 100 to 270 to suit your own taste. Note the use of ON...GOSUB in line 40.

```

5 REM SUPERPOET
10 PRINT"J":REM CLEAR SCREEN
15 IF RND(1)>0.3 THEN 30
20 FORJ=1TORND(1)*2:PRINT:NEXT
30 FORJ=1TO RND(1)*5+1:PRINT" ":NEXT
35 J=INT(RND(1)*18)+1
40 ON J GOSUB 100,110,120,130,140,150,160,170,180,190,200,210,220,230,240,250,260,270

```



```

50 FORP=1TO RND(1)*2000:NEXT
70 GOTO15
100 PRINT"■DETACHED";:RETURN
110 PRINT"■UNAWARE";:RETURN
120 PRINT"■UNABLE";:RETURN
130 PRINT"■INITIATE";:RETURN
140 PRINT"■REACHED OUT FOR";:RETURN
150 PRINT"■AVOIDS";:RETURN
160 PRINT"■SUFFERS";:RETURN
170 PRINT"■CAPACITY";:RETURN
180 PRINT"■SPIRITUAL";:RETURN
190 PRINT"■ALTHOUGH";:RETURN
200 PRINT"■DISCIPLINE";:RETURN
210 PRINT"■HE";:RETURN
220 PRINT"■AND";:RETURN
230 PRINT"■THEN";:RETURN
240 PRINT"■MASTER";:RETURN
250 PRINT"■AFTER";:RETURN
260 PRINT"■LONELY";:RETURN
270 PRINT"■HIS";:RETURN

```

AND THEN  
UNAWARE  
UNABLE

ALTHOUGH  
AND MASTER  
REACHED OUT FOR  
UNABLE

MASTER RETURNED  
UNABLE  
CAPACITY SPIRITUAL  
DISCIPLINE HE  
LONELY HE

AVOIDS LONELY MASTER

# Zauper Attack

In this program by Christopher Hutber of Milton Keynes, you must zap the Aliens before they are eaten by the Zaupers. You need to take care because these creatures may also eat you. "Z" moves your gun left, and "C" moves it right. "X" will fire your gun. Full instructions are within the program.

## Structure of the program:

Subroutine from 7000: This sets up a title page and gives the player instructions if they are wanted.

Line 8: Reads the time for the start of the game. This is compared, in due course, with another reading (line 1005) to see how long the round took you.

Lines 15 to 70: Draw Aliens.

Lines 100 to 120: Draw gun.

Lines 140 to 192: Get commands from player.

Lines 200 to 320: Move the gun.

Routine from line 400: Fire gun.

Line 555: Increment score.

Routine from line 1000: End of game, new game option.

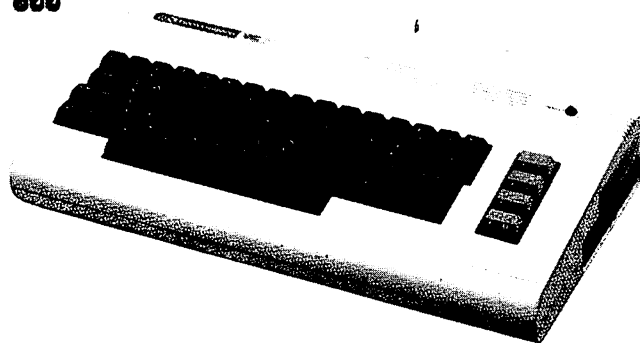
Routine from line 3000: 'Active Zaupers'.

```
0 PRINT"Z"
1 REMARKABLE PROGRAMME BY CHRISTOPHER HUTBER AGED 12
2 REM 24-27/12/81
3 GOSUB 7000
4 T1=TI
5 SC=0
10 PRINT"Z"
12 PRINT"XXXXXXXXXXXXXXXXXXXX"
13 REM DRAW ALIENS
15 POKE 36879,8
20 FOR I=38400 TO 38531
30 POKE I,1
40 NEXT I
50 FOR H=7680 TO 7767STEP 3
60 POKE H,81
70 NEXT H
90 REM DRAW GUN
100 T=7955
110 FOR R=38664TO38664+21
112 POKE R,7
114 NEXT R
120 POKE T,65
130 IF SC=30 THEN 1000
135 REM GET INSTRUCTION
140 GET A$:IF A$=""THEN 3000
170 IF A$="X"THEN400
180 IF A$="C"THEN300
190 IF A$="Z"THEN200
192 IF A$="#"THEN 5000
```

```

195 GOTO 140
197 REM MOVE GUN
200 FOR B=7944T07965
210 POKE B,70
220 NEXT B
230 T=T-1:GOTO 120
300 FOR B=7944T07965
310 POKEB,70
320 NEXTB
330 T=T+1:GOTO 120
399 REM FIRE
400 FORF=TT07680+(T-7944)STEP-22
410 POKEF,46
412 FOR W=1 TO25:NEXTW
414 POKE F,32
420 IF PEEK(F-22)=81THEN GOTO 480
430 NEXTF
455 POKE F+22,96
460 FOR I=1TO50:NEXTI
470 POKE F,87
472 FOR G=7680+(T-7944)TOT-22STEP22
474 POKE G,96
480 POKEF-22,32
482 IF PEEK(F)<>81ANDF<7702THEN GOTO 600
488 POKE 36877,220
490 L=7
500 POKE 36878,L
510 FOR M=1TO 200
520 NEXT M
540 POKE 36876,0
550 POKE 36878,0
555 SC=SC+1
560 PRINT"SCORE:";SC;"J":GOTO 120
600 PRINT"SCORE:";SC;"J":GOTO 120
1000 PRINT"J"
1005 T2=TI
1010 POKE 36879,30
1020 PRINT"WELL DONE"
1030 PRINT"YOU WIPED OFF THE ALIENS IN ";INT((T2-T1)/60);" SECONDS!"
1031 POKE 36878,15
1032 FOR L=1 TO 100
1033 POKE 36876,INT(RND(1)*128)+128
1034 FOR M=1 TO 10
1035 NEXT M
1036 NEXT L
1037 POKE 36876,0
1038 POKE 36878,0
1040 PRINT:PRINT
1050 PRINT"PLAY AGAIN ?"
1055 PRINT:PRINT
1060 GETS$
1070 IF S$=""THEN1060
1080 IF S$="Y"THEN 6

```



```

1090 IF S$="N"THEN1200
1100 GOTO 1060
1200 PRINTTAB(7);"BYE BYE"
1205 PRINT
1210 PRINT"THANKS FOR PLAYING"
1300 END
2999 REM ACTIVATE ZAUPERS
3000 FORE=1TO10:R=INT(RND(1)*75)+7600
3010 IF R>7767 THEN 3000
3020 Q=INT(RND(1)*20)+7944
3050 D=0.5+RND(1)
3060 IF DC1THEN V=21
3070 IF D>1THEN V=23
3100 FOR Z=RTOQSTEPV
3110 POKE Z,61
3120 POKE Z-V,32
3130 FOR X=1TO25:NEXTX
3150 IF A$="#"THEN 5150
3200 GET A$:IF A$<" THEN 170
3300 NEXT Z
3400 IF Z=TTHEN 4000
3500 GOTO 170
4000 PRINT"ZAUPERS HAVE WON "
4050 PRINT
4100 PRINT"MOON BASE DESTROYED!"
4150 REM EXPLOSION
4200 POKE 36877,220
4230 FOR L=15TO0STEP-1
4250 POKE 36878,L
4270 FOR M=1TO300
4290 NEXT M
4300 NEXT L
4320 POKE 36877,0
4330 POKE 36878,0
4500 GOTO 1040
5000 SC=SC-5
5100 PRINTSC;"7"
5200 FOR K=1TO 50:NEXT K
5300 GOTO 10
7000 PRINTTAB(3);" ██████████ "
7010 PRINT TAB(3);"ZAUPER ATTACK! ██████ "
7020 PRINTTAB(3);" BY ██████ "
7030 PRINTTAB(3);"C.R.J. HUTBER ██████ "
7040 PRINTTAB(3);" ██████████ "
7060 PRINT:PRINT
7100 PRINT"INTRUCTIONS (Y OR N)?"
7120 GET M$:IF M$=""THEN 7120
7130 IF M$="N"THEN RETURN
7140 IF M$="Y"THEN 7500
7150 GOTO 7120
7500 PRINT"YES"
7510 PRINT
7520 PRINT"'ZAUPER ATTACK' IS A GAME OF SPEED."

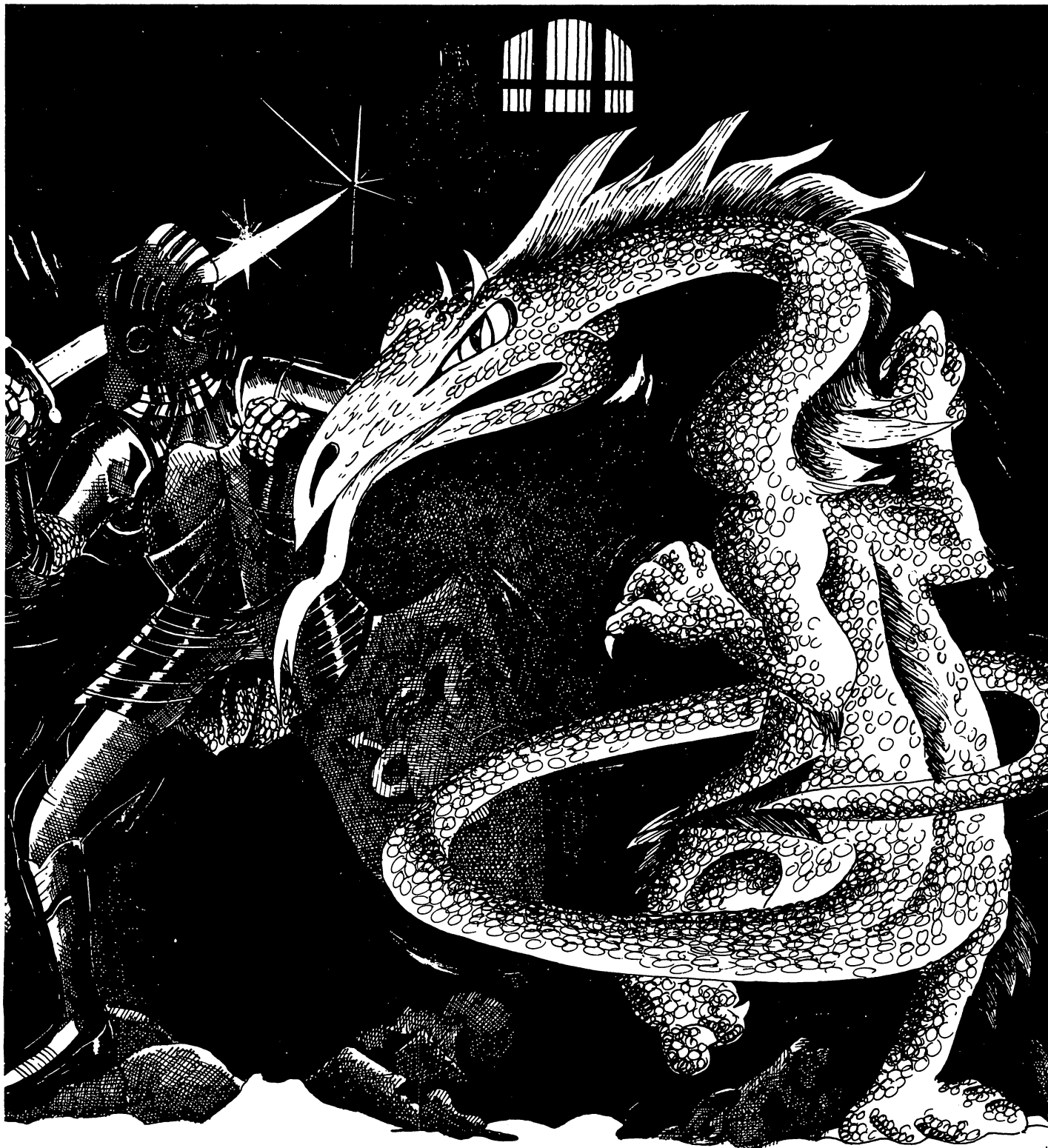
```



7530 PRINT:PRINT"THE OBJECT IS TO KILL ALL THE ALIENS IN AS QUICK TIME AS POSSIBLE."

7540 PRINT:PRINT

7550 PRINT"HIT A KEY"



GWULLEN

```

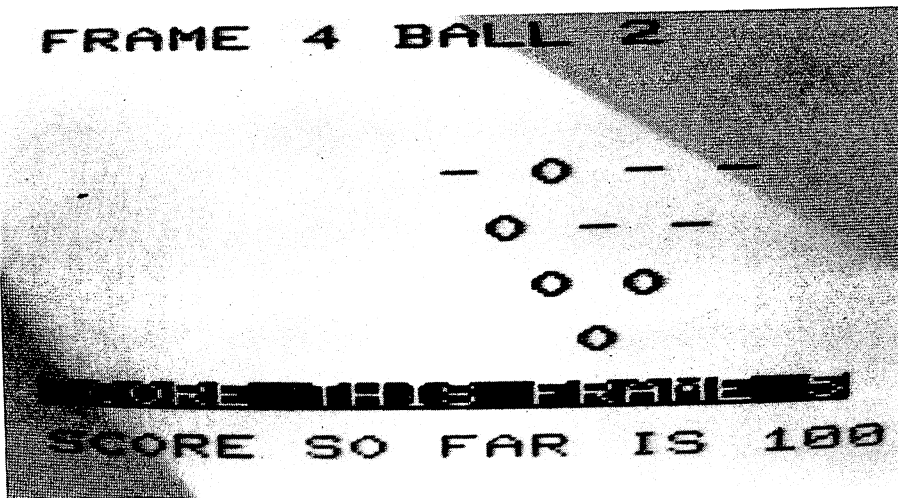
7560 GET N$:IF N$=""THEN 7560
7600 PRINT"J"
7610 POKE 36879,0
7620 PRINT"  KEY"
7630 PRINT"  "
7640 PRINT:PRINT
7650 PRINT"  -ALIEN"
7655 PRINT
7660 PRINT"  -ZAUPER"
7665 PRINT
7670 PRINT"  -YOUR GUN"
7672 PRINT:PRINT:PRINT
7675 PRINT"HIT A KEY"
7680 GET O$:IF O$=""THEN 7680
7700 PRINT"J"
7710 POKE 36879,234
7720 PRINT"THE ZAUPERS EAT THE ALIENS AND WILL"
7730 PRINT"CRASH INTO YOU GIVEN HALF A CHANCE."
7735 GOSUB 9000
7740 PRINT:PRINT
7750 PRINT"TO MOVE YOUR GUN PRESS"
7760 PRINT:PRINT"Z'-MOVES IT LEFT"
7770 PRINT:PRINT"C'-MOVES IT RIGHT"
7800 PRINT:PRINT
7810 PRINT"TO FIRE GUN PRESS:'X'"
7820 PRINT:PRINT
7830 PRINT"HIT A KEY"
7840 GET V$:IF V$=""THEN 7840
7850 PRINT"J"
7900 PRINT"WHEN ALL THE ALIENS ON THE SCREEN HAVE"
7910 PRINT"GONE,PRESS:'#'"
7920 PRINT"THIS WILL TAKE YOU BACK TO THE START AND"
7930 PRINT"TAKE AWAY FIVE POINTS"
7950 PRINT:PRINT
8000 PRINT"HIT A KEY TO START"
8010 GET X$:IF X$=""THEN 8010
8020 RETURN
9000 PRINT:PRINT
9010 PRINT"THE ZAUPERS ARE HIGHLYSENSITIVE TO THE HEAT "
9020 PRINT"GIVEN OFF BY YOUR MOVEMENT AND FIRING,"
9030 PRINT"THUS WHEN YOU DO SO,"
9040 PRINT"THEY ARE PARALYSED!"
9045 PRINT:PRINT"HIT A KEY"
9050 GET Y$:IF Y$=""THEN 9050
9060 PRINT"J"
9070 RETURN

```

# Superbowl

The VIC sets up the pins for you in this simulation of a 10-pin bowling alley, and then obligingly knocks them down, adding up your score as it goes.

There are 10 frames to a game, two balls to a frame. As you'll play this game, you'll find that strikes are few and far between. There is a highest score routine (310 to 330) which you may well want to adapt for other games you write.



```

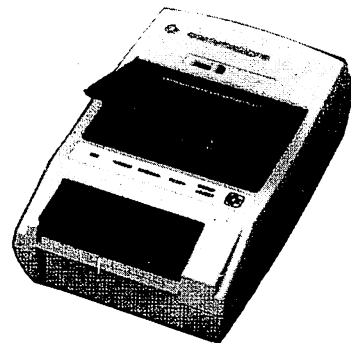
5 REM SUPERBOWL
20 Y=0:S=0
30 PRINT"J":REM CLEAR
40 FORB=1TO10
50 GOSUB500
60 FORE=1TO2:PRINT:PRINT:PRINT
65 PRINT"J":REM HOME
70 PRINT"  #FRAME"B"  #BALL"E
75 PRINT:FORT=1TO500:NEXT
80 Z=0
90 FORC=1TO10
100 IFE=2THEN120
110 A(C)=79
120 IF RND(1)>0.5 THEN A(C)=45
130 IF A(C)=45 THEN Z=Z+1
140 NEXTC
145 PRINT:PRINT:PRINT
150 PRINT,"  #CHR$(A(10))" "CHR$(A(9))" "CHR$(A(8))" "CHR$(A(7))
155 PRINT:GOSUB700
160 PRINT," "CHR$(A(6))" "CHR$(A(5))" "CHR$(A(4))
165 PRINT:GOSUB700
170 PRINT," "CHR$(A(3))" "CHR$(A(2))
175 PRINT:GOSUB700
180 PRINT," "CHR$(A(1))
190 PRINT
200 PRINT"  #SCORE THIS FRAME"Z"
215 PRINT
220 IFE=1 ANDZ=10 THEN 370
230 IFZ=10 THEN Z=15:PRINT,"  #BONUS!!"
240 IFE=2 THEN S=S+Z
250 IFE=2 AND BC>10 THEN PRINT"  #SCORE SO FAR IS"S
260 FORT=1TO1000:NEXT
270 PRINT

```

```

280 NEXTE
290 NEXTB
300 PRINT"SCORE FOR THAT GAME           WAS" S"
310 IFS<Y THEN 330
320 Y=S
330 PRINT"  HIGHEST SO FAR"Y
340 FORT=1T09000:NEXT
350 S=0
360 GOTO30
370 PRINT
380 PRINT,"STRIKE!!"
385 PRINT
390 FORT=1T01000:NEXT
410 S=S+15
420 E=2
440 GOTO230
500 FORD=1T010:A(D)=79:NEXT
505 GOSUB2000
510 PRINT " "
520 PRINT "  FRAME           "
530 PRINT:PRINT
540 PRINT:PRINT
550 PRINT,"CHR$(A(10))" "CHR$(A(9))" "CHR$(A(8))" "CHR$(A(7))
555 PRINT
560 PRINT,"CHR$(A(6))" "CHR$(A(5))" "CHR$(A(4))
565 PRINT
570 PRINT,"CHR$(A(3))" "CHR$(A(2))
575 PRINT
580 PRINT,"CHR$(A(1))
585 FORJ=1T05:PRINT"           ":NEXT
590 FORT=1T01000:NEXT
600 RETURN
700 REM DELAY, SOUND
710 POKE36878,15
720 FORU=249T0239STEP-2
730 POKE36876,U
750 FORU=238T0249
760 POKE36876,U
770 NEXT
780 POKE36876,0
800 POKE36878,0
810 FORT=1T050:NEXT
820 RETURN
2000 REM SET UP SOUND
2010 POKE36878,10
2020 FORK=248T0148 STEP-2
2025 POKE36879,26+INT(RND(1)*6)
2030 POKE36876,K
2040 POKE36875,K
2050 NEXT
2055 POKE36878,0
2060 RETURN

```



# Zombie Island

Your plane has crashed on a remote island, where the only topological features are round green swamps, and the only inhabitants are mindless zombies, shown on the display as letter Z's. The zombies are out to get you, a black 'clubs' symbol. You can move anywhere on the island, except through a swamp. The zombies are pretty stupid. They can see you, but not the swamps, and—as is well known among zombiologists—zombies drown instantly in swamps. You survive only if you manage to lure the zombies into the swamps.

You control your movements on the island with four keys—"A" = up, "Z" = down, "<" = left and ">" = right. Although you may find it a little strange using these keys at first, you'll soon find you are automatically pressing the right key for the direction in which you want to move. It will help you, in the early stages of using these keys, to note that the 'greater than' and 'less than' symbols point in the direction you will move if you press that key. These four keys are used in a number of programs in this book, and you may well want to use them in your own moving graphics games.

The number of zombies on the island is determined randomly (line 2055) and neither they, nor you, can move outside the area bounded in purple on the screen. The number of drowned zombies is shown near the bottom of the screen, as is the number left alive. The zombies make quaint noises as they move in a reasonably intelligent way, but have some preprogrammed stupidity to give you a chance to survive. The fewer zombies there are left, the faster they move, so the last one alive can give you a run for your money. Each round of the game ends with an echo of the noise your plane made when crashing. After a short pause, a new game will start automatically.

```
10 REM ZOMBIE ISLAND
20 GOSUB2000
30 GETS$: IFS$="" THEN S$=T$
40 AE=A: BE=B
50 IFS$="A" THEN A=A-22: B=B-22
60 IFS$="Z" THEN A=A+22: B=B+22
70 IFS$="." THEN A=A+1: B=B+1
80 IFS$="," THEN A=A-1: B=B-1
90 W=PEEK(A)
100 IF W=127 THEN A=AE: B=BE
110 IF W=26 THEN A=AE: B=BE
120 IF W=81 THEN A=AE: B=BE
130 POKE A, 1: POKE B, 1
140 POKE A, 88: POKE B, 0
150 T$=S$
160 REM CONTROL ZOMBIES
170 FOR R=1 TO Y
180 U=0
185 IF PEEK(Q(R))=81 THEN 260
190 IF Q(R)>A THEN U=-1: IFRND(0)>.5 THEN U=-22
200 IF Q(R)<A THEN U=1: IFRND(0)>.5 THEN U=22
210 POKE Q(R), 46: POKE P(R), 1
```

```

220 Q(R)=Q(R)+U:P(R)=P(R)+U
225 IFPEEK(Q(R))=88THEN400
230 IFPEEK(Q(R))=81THENTC=TC+1:FORI=1TO20:POKE36875,
    255-3*I:NEXT:POKE36875,0:GOT 0260
235 IFPEEK(Q(R))=127THENQ(R)=Q(R)-U:P(R)=P(R)-U
240 POKEQ(R),26:POKEP(R),2
260 IFTC=YTHEN310
270 POKE36874,250-RND(0)*15
290 NEXT
295 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
300 GOT030
310 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
312 POKE36878,0
315 PRINT"YOU'VE SURVIVED!!"
320 GOT0407
400 POKEQ(R),26:POKEP(R),2
402 POKE36874,0
405 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
406 PRINT"THAT'S THE END!"
407 FORY=1TO100
408 POKE36877,130+RND(0)*100
420 NEXT
430 POKE36877,0
440 FORY=1TO3000:NEXT
450 RUN
2000 REM INITIALISE
2005 PRINT"J":Y=0
2010 FORJ=1TO15
2020 POKE7679+J,127:POKE38399+J,4
2030 POKE7987+J,127:POKE38707+J,4
2040 NEXT
2050 FORJ=7680TO7988STEP22:POKEJ,127:POKE30720+J,4
2054 Z=INT(RND(0)*11)+3:Z1=INT(RND(0)*11)+3
2055 IFJ>7680ANDJ<7988THENPOKEJ+Z,81:POKEJ+Z+30720,3
2056 T=0:IFJ>7680ANDJ<7988ANDRND(0)>.6THENT=1
2057 IFT=1THENY=Y+1:Q(Y)=J+Z1:P(Y)=J+Z1+30720:POKEQ(Y),26:POKEP(Y),2
2060 POKEJ+15,127:POKE30735+J,4
2070 NEXT
2080 A=7726:B=38446:REM START POSITION PLAYER
2090 POKEA,88:POKEB,0
2100 T$="."
2120 POKE36878,15
2500 RETURN

```



# Motorcycle Jump

You are Evil K., world champion stunt rider, and your task in this graphic game on the VIC 20 is to jump over a number of red London buses. Each time you succeed, a new bus is added to the ones you must leap.

When you run the program, you'll be told the angle of the ramp, and the number of buses you must jump. You enter the speed at which you wish to leave the ramp (we suggest you start off between 34 and 40 miles per hour) and you'll see, and hear, your motorbike spin up and over the ramp, and—I hope—over the buses. If you succeed, the ramp will be raised, and the number of buses will be increased.

Because the angle of the ramp affects the distance you can clear, and because this program uses an approximation to genuine formulas to work out whether or not you would clear the buses given a particular take-off speed on a ramp of that angle, you'll find your interest in this program will remain high, no matter how many times you play it. There is no way, for example, to know that if there are four buses, a speed of 42 mph will always clear them. It depends on the angle of the ramp.

If you use too much acceleration, you'll flip upside down. Too little, and you'll crash. Far too little, and the program will tell you that you've "bingled"! If you manage to clear eleven buses, you'll be declared "The Champ".

```
10 REM MOTORCYCLE JUMP
12 POKE 36879,24
15 PRINT"J":U=7
20 GOSUB2000:REM VARIABLES
30 GOSUB3000:REM DISPLAY
100 GOSUB1000:REM CALCULATE
105 A$="BINGLED!"
110 IFABS(F-L)>5THEN A$="CRASHED"
120 IFF>=LANDF=<L+15 THEN A$="SUCCESS"
130 IFF>L+15THEN A$="LANDED UPSIDE DOWN"
140 U=1:GOSUB3000
145 L=L+10:N=N+INT(RND(1)*3+1)
147 B=B+1:IFB=11THENS000:REM CHAMPION
200 GOTO100
300 REM SOUND FX
310 POKE36877,220
320 POKE36878,K/3
330 RETURN
360 POKE36877,240
370 POKE36878,1.7*Z
380 RETURN
1000 PRINT"RAMP >"N"DEGREES"
1010 PRINT"X THERE ARE"B" BUSES"
```

```

1020 PRINT"THIS IS ATTEMPT"A
1040 INPUT"SPEED";V:IFV<=0THEN1040
1045 FORK=1TO500:NEXT
1050 A=A+1:E=(V*528)/360
1060 F=(E*COS(N))*((E*SIN(N))/32.2):F=ABS(F)
1070 RETURN
2000 L=10:N=25:B=1:A=1
2030 RETURN
3000 PRINT"XXXXXXXXXXXXXXXXXXXXXXXXXXXXX";
3010 FORZ=1TOB
3020 PRINT"X";
3030 NEXT:PRINT
3040 IFU=7THENRETURN
3050 POKE7944,127:POKE38664,4
3060 FORK=1TO50:GOSUB310:NEXT
3070 POKE38664,1
3080 W=7921:W1=38641
3090 FORZ=1TOB+4
3095 IF4*INT(Z/4)=ZTHENW=W-23:W1=W1-23
3100 POKEW+Z,127
3200 POKEW1+Z,4
3210 FORK=1TOZ:GOSUB360:NEXT
3220 POKEW1+Z,1
3300 FORK=1TO10:NEXT
3310 NEXTZ
3330 IFLEFT$(A$,1)<>"S"THEN4000
3350 FORZ=B+4TOB+8
3360 W=W+23:W1=W1+23
3370 POKEW+Z,127
3380 POKEW1+Z,4
3390 FORK=1TO20+Z
3400 NEXT
3410 POKEW1+Z,1
3420 NEXTZ
3430 POKE36878,0
3450 RETURN
4000 FORK=1TO20:POKE36879,INT(16*RND(1)+2+RND(1)*8):GOSUB320:NEXT
4010 PRINT"OH NO, YOU'VE"
4020 PRINT"A"
4022 POKE36877,250
4025 FORT=1TO100:POKE36878,RND(1)*15+1
4030 NEXT
4035 POKE36878,0
4040 GOTO4040
5000 FORK=1TO20:POKE36879,INT(16*RND(1)+2+RND(1)*8):NEXT
5010 POKE36879,25
5015 FORT=1TO50:NEXT
5020 PRINT"YOU'RE THE CHAMP!!"
5030 GOTO5000
6000 REMSTART WITH AROUND 34-40
6010 REM TOO LITTLE ACCELERATION AND YOU CRASH
6020 REM TOO MUCH AND YOU FLIP UPSIDE DOWN

```



# Traffic Jam

There are two versions of this program. The first uses the keyboard to control your car ("A" = up, "Z" = down, "," = left and "." = right) while the second uses a joystick.

The aim of the game is to drive your car (a red asterisk) from the top lefthand corner of the screen to the carpark (the red oval in the bottom righthand corner). You will be asked first to pick a skill level from one to nine. One is the hardest, and nine the easiest. A number of cars (colored diamonds) will appear on the screen, the number of cars being related to the difficulty level you choose. The carpark will flash off and on for a few seconds, and you'll appear in the top lefthand corner to make your journey.

You can only score if you make it to the carpark without hitting any of the cars, more and more of which appear as the game progresses. Your score is related to the skill level you choose and the time it takes you to drive to the carpark. The keyboard version only allows movement up, down, left, and right, while the joystick version of the game also allows diagonal moves.

```
10 REM TRAFFIC JAM
15 REM KEYBOARD VERSION
20 H$="000000":HS=0
30 PRINT"J"
40 GOSUB9540
1000 GETA$:IFA$=""THENA$=B$
1010 E=C:Q=S
1020 IFA$="."THENS=S+1:C=C+1
1030 IFA$=","THENS=S-1:C=C-1
1040 IFA$="A"THENS=S-22:C=C-22
1050 IFA$="Z"THENS=S+22:C=C+22
1070 W=PEEK(S)
1075 IFW=81THEN2040
1080 IFW=102THENC=E:S=Q
1090 IFW=90THEN2000
1200 POKEE,1:REM ERASE WITH WHITE
1210 POKEC,2:POKES,35
1220 B$=A$
1230 R=INT(RND(0)*458)+7704:R2=R+30720
1240 W=PEEK(R)
1250 IFW=102THEN1230
1260 POKE36878,15:POKE36875,140+(R-7704)/4:POKE36878,0:POKE36875,0
1270 POKER,90:POKER2,VAL(MID$(P$,INT(RND(0)*6)+1,1))
1280 FORO=1TO2*G-1:NEXT
1500 GOTO1000
2000 REM CRASH
2010 PRINT"XOXOXYOU HAVE CRASHED":M=0
2020 PRINT"XOXOXTIME: "RIGHT$(TI$,2)" SECONDS"
2030 GOTO3000
2040 PRINT"XOXOXYOU MADE IT!!":M=1
2050 POKE38881,1
2060 POKE38860,1
```

```

2070 GOTO2020
3000 TY=VAL(TI$)
3003 S=INT((50-TY)*100/G)*M
3005 IFS>HSTHENHS=S
3007 PRINT"SCORE:"S
3010 PRINT"HIGH SCORE:"HS
3020 FORT=1TO2000:NEXT
3030 GOTO30
5000 PRINT"SKILL LEVEL (1 TO 9)?"
5010 GET Z$:IFZ$=""THEN5010
5020 G=VAL(Z$)
5030 IFG<10RG>9THEN5010
5040 PRINT"J"
5050 RETURN
9540 S=7703
9550 C=38423
9560 P$="654320"
9570 B$="."
9580 GOSUB5000
9590 FORZ=7680TO7701:POKEZ,102:POKEZ+30720,VAL
(MID$(P$,INT(RND(0)*6)+1,1)):NEXT
9600 FORZ=8164TO8185:POKEZ,102:POKEZ+30720,VAL
(MID$(P$,INT(RND(0)*6)+1,1)):NEXT
9620 FORZ=7680TO8164STEP22:POKEZ,102:POKEZ+30720,
0:POKEZ+21,102:POKEZ+30741,0:NEXT
9670 FORU=1TO25-2*G
9680 R=INT(RND(0)*458)+7704:R2=R+30720
9685 POKE36879,INT(RND(0)*127)+1
9690 W=PEEK(R)
9700 IFW=102THEN9680
9710 POKE36878,15:POKE36875,140+(R-7704)/4:POKE36878,0:POKE36875,0
9720 POKER,90:POKER2,VAL(MID$(P$,INT(RND(0)*6)+1,1))
9730 NEXT
9733 POKE36879,26
9735 FORL=1TO50
9736 POKE8162,81
9737 POKE38882,0
9738 FORT=1TO10:NEXT
9739 POKE38882,5
9740 NEXT
9745 FORT=1TO1000:NEXT
9750 TI$="000000"
9780 POKE38882,2
9999 RETURN

```

```

10 REM TRAFFIC JAM (JOYSTICK VERSION)
15 DIMJS(2,2)
20 HS=0
30 RESTORE:GOSUB9490
510 POKEDD,127:S3=-((PEEK(PB)AND128)=0):POKEDD,255
520 P=PEEK(PA):S1=-((PAND8)=0):S2=((PAND16)=0):S0=((PAND4)=0)
530 FR=-((PAND32)=0):X=S2+S3:Y=S0+S1
1010 E=C:Q=S
1020 S=S+JS(X+1,Y+1)

```

```

1025 C=C+JS(X+1,Y+1)
1070 W=PEEK(S)
1075 IFW=81THEN2040
1080 IFW=102THENC=E:S=0
1090 IFW=90THEN2000
1200 POKEE,1:REM ERASE WITH WHITE
1210 POKEC,2:POKES,35
1230 R=INT(RND(0)*458)+7704:R2=R+30720
1240 W=PEEK(R)
1250 IFW=102THEN1230
1260 POKE36878,15:POKE36875,140+(R-7704)/4:POKE36878,0:POKE36875,0
1270 POKER,90:POKER2,VAL(MID$(P$,INT(RND(0)*6)+1,1))
1280 FORO=1TO2*G-1:NEXT
1500 GOTO510
2000 REM CRASH
2010 PRINT"■■■■YOU HAVE CRASHED":M=0
2020 GOTO2070
2040 PRINT"■■■■YOU MADE IT!":M=1
2050 POKE38881,1
2060 POKE38860,1
2070 PRINT"■■■■TIME: "RIGHT$(TI$,2)" SECONDS"
2080 S=INT((50-VAL(TI$))*12345/G)*M
2090 IFS>HSTHENHS=S
2100 PRINT"■■■■SCORE: "S
2105 PRINT"■■■■HIGHSCORE: "HS
2110 FORT=1TO3000:NEXT
2120 GOTO30
5000 PRINT"■■■■SKILL LEVEL (1 TO 9)?"
5010 GET Z$:IFZ$=""THEN5010
5020 G=VAL(Z$)
5030 IFG<10RG>9THEN5010
5040 PRINT"J"
5050 RETURN
9490 PRINT"J"
9500 REMINITIALISE
9510 POKE37139,0:DD=37154:PA=37137:PB=37152
9520 FORZ=0TO2:FORJ=0TO2:READJS(J,Z):NEXTJ,Z
9530 DATA-23,-22,-21,-1,0,1,21,22,23
9540 S=7703
9550 C=38423
9560 P$="654320"
9580 GOSUB5000
9590 FORZ=7680TO7701:POKEZ,102:POKEZ+30720,VAL
(MID$(P$,INT(RND(0)*6)+1,1)):NEXT
9600 FORZ=8164TO8185:POKEZ,102:POKEZ+30720,VAL
(MID$(P$,INT(RND(0)*6)+1,1)):NEXT
9620 FORZ=7680TO8164STEP22:POKEZ,102:POKEZ+30720,0:POKEZ+21,
102:POKEZ+30741,0:NEXT
9670 FORU=1TO25-2*G
9680 R=INT(RND(0)*458)+7704:R2=R+30720
9685 POKE36879,INT(RND(0)*127)+1
9690 W=PEEK(R)
9700 IFW=102THEN9680
9710 POKE36878,15:POKE36875,140+(R-7704)/4:POKE36878,0:POKE36875,0
9720 POKER,90:POKER2,VAL(MID$(P$,INT(RND(0)*6)+1,1))

```

```
9730 NEXT
9733 POKE36879,26
9735 FORL=1T050
9736 POKE8162,81
9737 POKE38882,0
9738 FORT=1T010:NEXT
9739 POKE38882,5
9740 NEXT
9745 FORT=1T01000:NEXT
9750 TI$="000000"
9780 POKE38882,2
9999 RETURN
```



# Hangman 11

Here's another version of Hangman. In this one, the computer picks the word for you to guess. Change the words in the DATA statements from line 370 to add your own vocabulary. The number of "lives" you have is related to the number of letters in the word to be guessed.

```
10 REM HANGMAN-11
20 FORG=1TORND(1)*22+1
30 READA$
40 NEXT
50 Y=0
60 N=LEN(A$)
80 FORG=1TON
90 B(G)=ASC(MID$(A$,G,1))
100 D(G)=B(G)
110 NEXT:PRINT"#####"
120 Q=INT(N+N/2+.5):PRINT"YOU HAVE"Q"CHANCES"
130 FORJ=1TOQ:Y=Y+1
140 GOSUB410
150 IFH=NTHEN300
190 PRINT"#####"Q+1-J"CHANCES LEFT"
200 INPUTC$
210 F=ASC(C$)
220 FORG=1TON
230 IFD(G)=FTHEND(G)=0:J=J-1
240 NEXT:NEXT
250 GOSUB410
260 PRINT:PRINT"#####SORRY, TIME'S UP!#####"
280 GOTO330
300 REM***WIN**
310 PRINTTAB(5)"#####WELL DONE!#####"
320 PRINT"#####YOU GOT THE WORD IN"Y-1
330 PRINT"#####IT WAS #####"A$
340 GOTO340
370 DATA"TERROR","POSTURE","ELEPHANT","STATUS","BACHELOR","ANSWER"
380 DATA"TENOR","BANANA","FIGURE","IDIOT","NARCOTIC","PATHETIC"
390 DATA"WIZARD","WICKED","WIZENED","EVIL"
400 DATA"PARTICLE","ATOM","ELECTRON","START","FAMISHED","EAGLE"
410 H=0
415 PRINT"#####"
417 FORE=1TON
420 IFB(E)=D(E)THENPRINT"#####";
430 IFB(E)<>D(E)THENPRINT"#####";CHR$(B(E));:H=H+1
440 NEXT:PRINT
460 PRINT:IFHC>NTHENPRINTH"CORRECT LETTERS"
480 PRINT
490 RETURN
```

# Antihang

This is Hangman in reverse. The computer tries to guess the word you have chosen.

When you run the program, you'll be asked HOW LONG IS THE WORD YOU HAVE CHOSEN? Enter the number of letters in the word—if your word were APPLE, you'd enter 5—and then press RETURN. The next thing you'll see on the screen is five inverse blue dashes, one for each letter in the word, as well as LIVES LEFT - 10. This is followed by I GUESS and the letter the computer has guessed. If the letter is one which *is* in the word, say A, then you enter 1, to show it was the first letter in your chosen word. If the letter is not in your word, you enter 0. Assuming the computer guesses A as the first letter, you enter 1 and press RETURN. Immediately, the five inverse dashes are reprinted, but this time the first one has changed into an A. The words I GUESS A are still there, to cater for double letters. Because there are not two A's in APPLE, you enter 0 and press RETURN.

Here's how one game I played with the VIC progressed. I was thinking of the word START:

```
T - 5 LIVES LEFT - 10   ---- T
T - 2 LIVES LEFT - 10   - T -- T
T - 0 LIVES LEFT - 10   - T -- T
E - 0 LIVES LEFT - 9    - T -- T
A - 3 LIVES LEFT - 9    - T A - T
A - 0 LIVES LEFT - 9    - T A - T
O - 0 LIVES LEFT - 8    - T A - T
R - 4 LIVES LEFT - 8    - T A R T
R - 0 LIVES LEFT - 8    - T A R T
S - 1 LIVES LEFT - 8    S T A R T   I WIN I WIN I WIN
```

You'll find that, generally, the longer the word, the better the chance the VIC has of working it out. Antihang is based on a program written by Toni Baker.

```
10 REMETAQNRISHDLFCMUGYPWBJKQXVZ
20 L=10:Q=45
30 PRINT"10000HOW LONG IS THE WORD YOU HAVE CHOSEN?"
40 INPUTN:PRINT"?"
50 DIMA(26),C(N),G(N)
110 FORZ=1TO26
120 A(Z)=PEEK(4101+Z)
130 IFZ<N+1THENG(Z)=Q
140 NEXT
150 Z=INT(RND(0)*3)+1
160 B$=CHR$(A(Z))
170 FORJ=ZTO25
180 A(J)=A(J+1)
190 NEXT
200 A=0
210 PRINT"1000011111";
```



```
220 FORZ=1TON
230 PRINTCHR$(G(Z));
240 NEXT:PRINT
280 PRINT"###LIVES LEFT -"L
290 PRINT"###I GUESS "B$
300 INPUTB1
310 IFB1=0THEN350
320 A1=1
330 G(B1)=ASC(B$)
340 GOTO200
350 F=0
360 FORZ=1TON
370 IFG(Z)=0THENF=1
380 NEXT
390 IFF=0THENPRINT"###I WIN!!":GOTO390
400 IFA1=0THENL=L-1
410 A1=0:IFL>0THEN150
420 PRINT"###YOU WIN!!":GOTO420
```

# Treacle Balls

In this game of logic and deduction, you roll balls down a series of chutes numbered one to seven. There are three pools of treacle in the chutes. They may all be in the same chute, in three different chutes, or two in one and the third in a different chute. You have six seconds (guesses) to work out where the treacle lies.

When a ball hits treacle, it either sinks (you'll be told THE BALL VANISHED), or it is deflected to the chute to the right or to the left of the one it is in. If there is a treacle in two adjoining chutes, they may both act on the ball before it reaches the end, confusing you to some extent.

If you wish to guess where the balls are, you enter '8' instead of a chute number, and then enter your three guesses. You will be told how many you had to correct. If you think there are two pools in the same chute, you must enter the number twice in your guesses. If you fail to guess where the treacle lies within six seconds, you'll be told where it is, and the game ends. If you wish to make the game a little easier the first few times you play it, change the six in line 70 to a higher number.

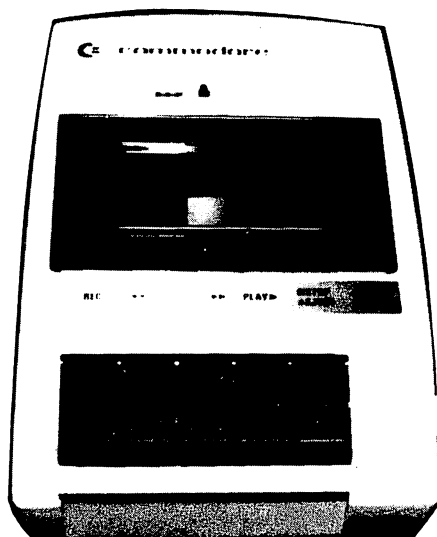
```
10 REM TREACLE BALLS
20 REM POSITION TREACLE
30 FORA=1TO3
40 B(A)=INT(RND(1)*7)+1
50 NEXT
60 REM COUNT GUESSES
70 FORH=6TO1 STEP-1
80 PRINT"YOU YOU HAVE"H"SECONDS"
85 PRINT"ENTER ENTER BALL CHUTE NO."
86 PRINT"OR 8 IF YOU THINK YOU"
87 PRINT"KNOW WHERE THE"
88 PRINT"TREACLE LIES"
90 INPUTC:IFC=8THEN5000
95 GOSUB3000
100 D=1
110 IFB(D)=CTHEN1000
120 IF DC3 THEN D=D+1:GOTO110
125 GOSUB4000
130 PRINT"THE THE BALL ROLLED"
140 PRINT"OUT OF"C
150 FOR Z=1TO2000:NEXT
160 NEXTH
170 PRINT"SORRY SORRY, TIME IS UP"
180 PRINT"THE THE TREACLE WAS IN"
190 FOR A=1TO3
200 PRINT B(A)
210 NEXT
220 END
1000 REM TREACLE!
1010 IF RND(1)>=.9 THEN 2000
1020 IF C=1 THEN C=2:GOTO100
1030 IF C=7 THEN C=6:GOTO100
```



```

1040 F=INT(RND(1)*2)-1
1060 C=C+F
1075 GOTO100
2000 REM LOST
2010 PRINT"THE BALL VANISHED"
2020 GOTO150
3000 PRINT"TAB(3+C);C
3015 FORZ=1TO5
3020 FORY=1TO10*Z:NEXTY
3030 PRINT TAB(5);"TTTTTTT "
3040 NEXT
3050 RETURN
4000 PRINTTAB(3+C);" ";C"
4030 RETURN
5000 REM TRIAL GUESS
5010 PRINT"OK, WHERE DO YOU"
5020 PRINT"THINK THE TREACLE"
5030 PRINT"POOLS ARE?"
5040 INPUTQ(1),Q(2),Q(3)
5050 SR=0
5055 FORY=1TO3:W(Y)=B(Y):NEXTY
5060 FORN=1TO3
5070 FORM=1TO3
5080 IFQ(M)=B(N)THENSR=SR+1:B(N)=0:Q(M)=0
5090 NEXTM,N
5105 FORP=1TO3
5106 B(P)=W(P)
5107 NEXT
5110 IF SR>2THEN 5150
5120 IF SR>0 THEN PRINT "YOU GOT"SR"RIGHT"
5130 IF SR=0 THEN PRINT"WRONG, WRONG, WRONG"
5140 GOTO150
5150 PRINT"YES, YOU GOT THEM"
5160 PRINT"WITH"H"SECONDS TO GO"

```



# Craps

Craps is a relatively simple gambling game played with two dice. The simplicity of the game itself is somewhat offset by the complexity of the betting possibilities. To make it easier to learn, we've included two versions of the game: Minimalist Craps to show you the game of craps in action and SF Craps which enables you to bet following some casino-like rules.

As you can see, the first listing is very short indeed. Enter and run it, and you'll then find it much easier to understand the description of the game.

To play, you roll two dice and add up their pips. If you roll a seven or an eleven on the first roll (called a *natural*) you win, and that round is over. If you roll two, three, or twelve on the first roll (called *craps*), you lose. Rolling four, five, six, eight, nine, or ten on the first roll becomes your *point*. The aim of the game—assuming it has not ended with the first roll—is to roll your point again, before you throw a seven. When you're sure you understand these instructions, look again at the first Craps program in action to relate what you've read here to the program.

Once you've understood Craps so far, you're ready to enter the deluxe version of the game, SF Craps. In this version, you're introduced to Craps betting. You can bet on the round overall for a win ("Pass") or on the round overall for a loss ("Don't Pass"). If the game lasts more than one roll of the dice, you can have a side bet on each subsequent roll, betting that a particular number, including seven if you like, will come up. You do not need to make the side bets if you prefer to keep the game fairly simple.

```
10 REM MINIMALIST CRAPS
12 G=0:W=0:L=0
15 G=G+1
20 B$="YOU ROLLED":PRINT"?"
27 PRINT:PRINT"WINS"W,"LOSSES"L
28 PRINT:PRINT"GAME NUMBER"G
30 GOSUB200
40 IFA=7ORA=11THEN240
50 IFA=2ORA=3ORA=12THEN230
55 F=A
60 PRINT:PRINT"YOUR POINT IS"P
70 GOSUB200
80 IFA=PTHEN230
90 IFA=7THEN240
100 FORT=1TO1000:NEXT
110 PRINT"?:GOTO60
200 A=INT(RND(1)*6+RND(1)*6+1)
210 FORT=1TO2000:NEXT
215 PRINT:PRINTB$A
220 RETURN
230 PRINT"YOU WIN":W=W+1:GOTO250
240 PRINT"YOU LOSE":L=L+1
250 FORT=1TO1000:NEXT
260 GOTO15
```

```
10 REM SF CRAPS
15 PRINT"?:GOSUB 770
```

```

20 MO=20
30 GOTO115
40 PRINT"PRESS RETURN TO ROLL"
50 GET A$:IFA$="" THEN50
60 A=INT(RND(0)*6)+INT(RND(0)*6)+2
70 GOSUB 770
80 PRINT"YOU ROLLED"A
82 FOR T=1TO500:NEXT
85 RETURN
100 IF MO<1 THEN PRINT"YOU'RE BROKE!":GOSUB770:GOTO100
110 FOR T=1TO5000:NEXT T
115 PRINT" ":PRINT"YOU START ROUND":PRINT TAB(8);"WITH $"MO
120 PRINT"PLACE YOUR BET"
130 PRINT" P TO PLACE BET":PRINT"ON PASS LINE,"
140 PRINT" D FOR DON'T PASS"
150 GET B$:IF B$="" THEN 150
155 IF B$<>"P" AND B$<>"D" THEN 150
160 B=0
170 INPUT"SIZE OF BET";B
180 IF B>MO OR B<1 THEN GOTO 170
190 GOSUB 40
200 IF A<>7 AND A<>11 THEN GOTO 310
210 REM NATURAL
220 PRINT"YOU ROLLED A NATURAL"
230 IF B$="D" THEN 270
235 PRINT"ON PASS BET"
240 PRINT"YOU WIN $"B
250 MO=MO+B
260 GOSUB 770:GOTO110
270 PRINT "ON DON'T PASS BET"
280 PRINT "YOU LOSE $"B
290 MO=MO-B
300 GOTO100
310 IF A<>2 AND A<>3 AND A<>12 THEN 350
320 GOSUB 770:PRINT:PRINT"SF CRAPS!"
325 FOR T=1TO100:NEXT T
330 IF B$="P" THEN 280
340 GOTO240
350 PT=A
355 IF MO<1 THEN 100
360 PRINT"YOU NOW HAVE $"MO
370 PRINT"YOUR POINT IS "PT
380 PRINT"INPUT NUMBER FOR":PRINT"SIDE BET, OR PRESS"
390 PRINT"RETURN FOR NON-BET"
400 K$="":C=0
410 INPUTK$
420 IF K$="" THEN 490
430 C=VAL(K$)
440 IF C<2 OR C>12 THEN 400
450 INPUT"HOW MUCH";D
470 GOSUB 710
480 IF D>MO OR D<1 THEN 450
490 GOSUB 60

```

```

497 IFA=7THEN630
500 IFA=PTTHENPRINT"YOU'VE MADE YOUR POINT":IFC=0THEN230
520 IFC=0THEN355
530 IF C<>A THEN 580
540 PRINT"AND YOU WIN A SIDE"
550 PRINT "BET OF $"WI
560 MO=MO+WI
565 IFA=PTTHEN230
570 GOTO355
580 PRINT"YOU LOSE $"WI
590 PRINT"ON YOUR SIDE BET"
600 MO=MO-WI
605 IF MO<1THEN 100
607 IFA=PTTHEN230
610 GOTO355
630 PRINT"YOU ROLLED 7...."
640 IFB$="D"THENPRINT"ON DON'T PASS BET":GOTO240
660 PRINT"ON PASS BET":GOTO280
710 REM ODDS/WIN
720 WI=D
730 IF A=6 OR A=8 THEN WI=INT((8*D/5)+.5)
740 IF A=5 OR A=9 THEN WI=INT((5*D/2)+.5)
750 IFA=4 OR A=9 THEN WI=2*D
760 RETURN
770 REM SOUND
780 POKE 36878,15
790 FORT=10 TO 180 STEP RND(1)*10+.5
800 POKE 36876,255-T
820 NEXT T
830 POKE 36876,0
840 POKE 36878,0
850 RETURN

```



# Caveman

As the Mighty Caveman, you must survive in the labyrinth-like cave system for 25 minutes, battling monsters and finding treasure, while trying to avoid quicksand, and blundering into walls and blocked caves. You have five arrows, and each monster you kill gains you extra wealth. There are also magic caves, which move you randomly through the system.

This program occupies all but 70 bytes of the memory on the standard VIC so there is no room for elaboration. To make sure as many features as possible could be squeezed in, PRINT statements are terse to the point of rudeness.

You start in cave 55. You are shown a view of the system from above at the beginning of the program and from time to time while a game is underway. The key to the cave's contents is H = you (for human), \$ = gold, Q = quicksand, a diamond shape = a magic cave, a grey square = a blocked cave, and a full stop = an empty cave.

You can move up, down, right, or left one square at a time (which you do by entering N = north, S = south, E = east, or W = west). You can also choose to shoot into an adjoining cave, which you do by entering an F. Your cave computer will warn you when things are nearby (NEARBY IS . . . GOLD is one typical message), but being a Cromagnon VIC 20BC, it tends to malfunction so you only know of the contents of one of the surrounding caves, rather than what is in all of them. As well, it does not tell you which of the surrounding caves it is talking about.

A cave is emptied after you leave it, so you cannot revisit a cave containing gold over and over again to enrich yourself. If a beastie gets you or if you fall into quicksand or run out of air, the game ends with a printout of the system.

When you run the program, you'll see the words CAVE 55 at the top of the screen. If your Cromagnon VIC 20BC has any message for you, it will appear next, followed by a number which is the minutes of air you have left, and then a prompt questionmark. The computer is waiting for your direction input (N, S, E, or W) or a decision to fire an arrow (F). If you try to go where there is no path, a message BLOCKED CAVE will appear, and you'll have to enter a new direction. If you say you wish to fire an arrow when your five are used up, you'll be told you're out of arrows and be asked for a new instruction. Good hunting, Caveman.

```
30 DIMA(100):H=0:Q=0:L=0:G=0:AR=5
40 POKE36878,15
50 FORB=1TO100:A(B)=46
60 IFB<120RB>90OR10*INT(B/10)=BOR10*INT(B/10)=B-1THENA(B)=166
100 NEXT
110 FORB=1TO5:RESTORE:FORD=1TO5
115 Z=INT(RND(1)*76)+12:IFA(Z)=166THEN115
120 READC:A(Z)=C
130 NEXT:NEXT
140 DATA166,218,77,81,36
150 FORB=1TO8:READP(B):NEXT:DATA-11,-10,-9,-1,1,9,10,11
230 E=55
240 A(E)=72
245 PRINT"TIME";:GOSUB9040
250 Q=INT(RND(1)*7)
305 IFQ=0ANDC<>55THENGOSUB9040
310 PRINT"TIMECAVE"E
```

```

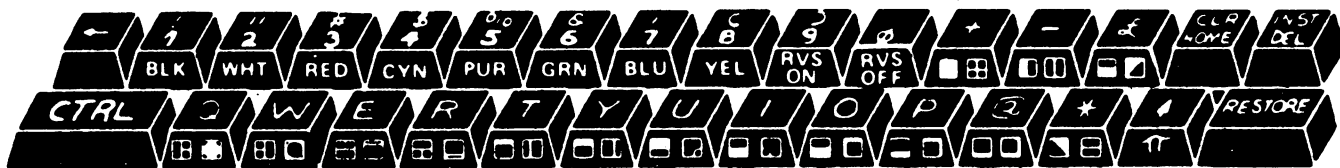
320 IFG>0THENPRINT"叮叮"0"GOLD"
330 GOSUB5000
340 PRINT"叮叮"25-H
350 INPUTZ$:U=0
360 IFZ$="N"ANDA(E-10)=166ORZ$="S"ANDA(E+10)=166ORZ$="E"ANDA(E+1)=166THENU=1
362 IFZ$="W"ANDA(E-1)=166ORU=1THENPRINT"叮叮BLOCKED CAVE"
:FORT=1TO2000:NEXT:GOTO350
375 A(E)=46:IFZ$="N"THENE=E-10
380 IFZ$="S"THENE=E+10
390 IFZ$="E"THENE=E+1
400 IFZ$="W"THENE=E-1
405 IFZ$="F"THENGOSUB6000
410 IFA(E)=218THENGOSUB1000
420 IFA(E)=77THENGOSUB2000
430 IFA(E)=81THENGOSUB3000
440 IFA(E)=36THENGOSUB4000
450 H=H+1:IFH=25THENQ=9:GOTO9000
460 FORT=RND(1)*40+130TO177STEPRND(1)*19+2:POKE36875,T:FORW=1TOT:NEXT
465 POKE36876,200-T:NEXT:POKE36875,0:POKE36876,0
470 GOTO250
1000 PRINT"叮叮叮叮MAGIC!!"
1020 FORU=1TO300:POKE36879,RND(1)*24+8:POKE36876,RND(1)*10+240:NEXT:POKE36879,29
1025 POKE36876,0:A(E)=46
1030 E=INT(RND(1)*76+12):IFA(E)=166THEN1030
1040 RETURN
2000 PRINT"叮叮MONSTER HERE"
2010 FORT=1TO1000:NEXT
2020 M=RND(1):IFM<.2THENPRINT"叮叮IT RUNS AWAY:RETURN"
2030 PRINT"叮叮IT'S SEEN YOU..."
2040 FORT=1TO1000:NEXT
2050 IFM>.85THENPRINT"叮叮AND FLEES"FORT=1TO999:NEXT:RETURN
2060 PRINT"叮叮AND EATS YOU!!":FORT=1TO990:NEXT:Q=9:GOTO9000
3000 FORJ=1TO20:PRINTTAB(5*J);"叮叮HORRORS..."
3020 FORU=230TO280STEP10:POKE36879,RND(1)*24+8:POKE36876,100+U/3
3025 NEXT:POKE36879,29:NEXT
3040 PRINT"叮叮叮叮叮叮QUICKSAND!!"
3045 POKE36876,0
3050 FORT=1TO1000:NEXT
3055 Q=9
3060 GOTO9000
4000 FORJ=1TO20:PRINTTAB(5*J);"叮叮叮叮HEALTH!!!":FORT=1TO10*J:NEXT:NEXT
4010 K=INT(RND(1)*100)+100
4020 FORU=1TO100:POKE36879,RND(1)*24+8:POKE36876,RND(1)*100+100:NEXT:POKE36879,29
4025 POKE36876,0
4040 PRINT"叮叮叮叮GOLD WORTH $"K"!!!":G=G+K:FORT=1TO3000:NEXT:RETURN
5000 Y=1
5005 L=A(E+P(Y))
5006 IFL<>46THEN5020
5007 IFY<8THENY=Y+1:GOTO5006
5010 IFL=46THENRETURN
5020 PRINT"叮叮叮叮NEARBY IS..."
5030 IFL=166THENPRINT"NO PATH"

```

```

5040 IFL=218THENPRINT"MAGIC"
5050 IFL=77THENPRINT"MONSTER"
5060 IFL=81THENPRINT"QUICKSAND"
5070 IFL=36THENPRINT"GOLD"
5080 FORT=1TO3000:NEXT:RETURN
6000 AR=AR-1:IFAR=0THENPRINT"NO ARROWS":RETURN
6010 PRINTAR"ARROWS":SS=0
6020 INPUT"XOTO";S$
6030 IFS$="N"ANDA(E-10)=77THENS=1:YT=E-10
6040 IFS$="S"ANDA(E+10)=77THENS=1:YT=E+10
6050 IFS$="E"ANDA(E+1)=77THENS=1:YT=E+1
6060 IFS$="W"ANDA(E-1)=77THENS=1:YT=E-1
6070 IFSS=0THENPRINT"NO LUCK":GOTO6120
6080 PRINT"XHIT"
6090 FORT=1TO999:NEXT:IFRND(1)>.3THEN6110
6100 PRINT"KILLED":A(YT)=46:G=G+INT(RND(1)*100):GOTO6120
6110 PRINT"WOUNDED"
6120 FORT=1TO3000:NEXT:RETURN
9000 IFQ=9THENGOTO9015
9010 PRINT"NO AIR LEFT"
9015 PRINT"XOODS SURVIVED"H"MINUTES      FOUND $"G"OF GOLD"
9040 A(E)=72
9050 FORJ=1TO100
9060 PRINTCHR$(A(J));
9070 IF10*INT(J/10)=JTHENPRINT
9080 NEXT:IFQ=9THENEND
9090 RETURN

```



# Tranquility Base

Here is a short moon-landing simulation which, despite its simplicity, is good fun to play and will certainly give you a challenging task.

You start off around 500 feet above the lunar surface, with a limited quantity of fuel. You control the descent of your craft by entering your choice of thrust by pressing the number keys. You have fairly tight limits within which to land safely.

Running out of fuel before you reach the ground or hitting the ground at an unacceptable speed will cause you to crash. A minus velocity means you are falling toward the lunar surface. You may well start off climbing away from the moon, but its gravity will soon draw you down.

Once you've mastered the program in its present form, you may wish to add a display, or modify the program in some other way. Giving yourself less starting fuel is a good way to make the program more difficult. F% is your fuel, V% your velocity, and H% your height.

READY.

```
10 REM TRANQUILLITY BASE
20 FX=130+RND(1)*40
30 VX=-6+RND(1)*20
40 HX=500-RND(1)*10
60 PRINT"3"
70 PRINT"#####FUEL:"FX
80 PRINT"#####VELOCITY:"VX
90 PRINT"#####HEIGHT:"HX
100 GET AX:FORJ=1TO800:NEXTJ
110 FX=FX-AX
120 CX=AX-2
125 AX=0
130 HX=HX+VX+CX/4
140 VX=VX+CX
145 IFFX<1ANDHX<10THEN160
150 IF HX>10THEN 60
160 IFVX>-9ANDVX<8THEN 210
170 PRINT"#####CRASH#####";
180 FORT=1TO300:NEXT
190 GOTO170
210 PRINT"#####GREAT LANDING. SCHIEF"
220 PRINT:PRINT"FINAL READINGS AS YOU"
225 PRINT"TOUCHED DOWN ON THE"
226 PRINT"LUNA SURFACE:"
230 PRINT:PRINT"FUEL:"FX
240 PRINT"VELOCITY:"VX
```

READY.

## Lodestar/3-D Maze

You are searching within a maze for the precious lodestar. At each point in the maze, you'll be told which directions from your current position are open. The display takes the form:

```
MOVE NUMBER 1
NORTH: OPEN
SOUTH: WALL
EAST: OPEN
WEST: WALL
LODESTAR INDICATOR READS 1200
DIRECTION?
N S E W H L
```



You enter the initial letter of the move you wish to make. H (for help) gets you a view of the maze from above, with your position shown as a blue asterisk. But although you can see where you are within the maze, the lodestar is not marked.

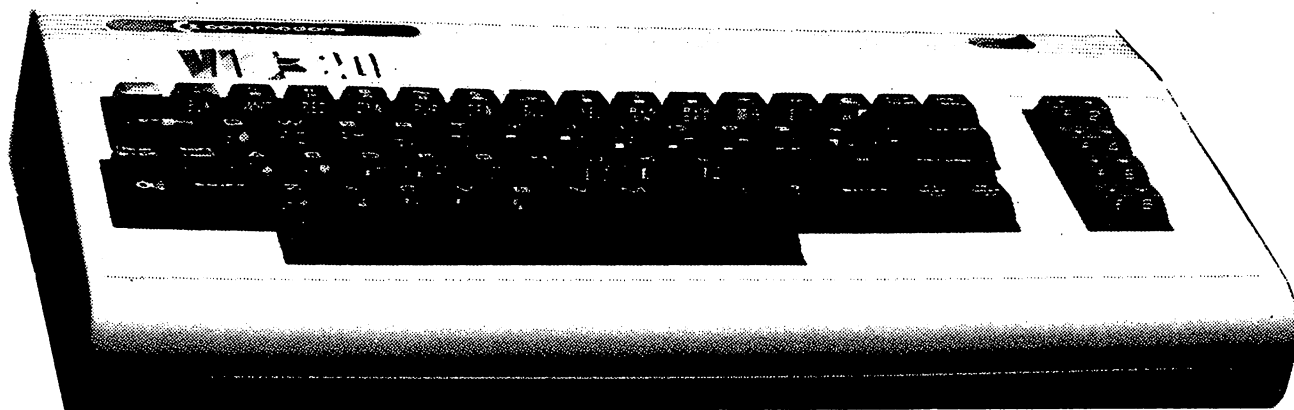
You will be pleased to see how quickly you start really visualizing the maze in three dimensions, and how you will be moving confidently through it. The maze changes from game to game, and the lodestar can be in one of three positions within it. Your score at the end depends on how few moves it took you to find the lodestar. Asking for help costs you a penalty of 15 moves! As you become familiar with the game, you'll learn how to make the best use of the feedback from the Lodestar Indicator.

If you have extra memory, and you feel particularly ambitious, you could add a 3-D display to show the view ahead of you after each move. Lines 550 to 580 determine which of the three positions will be used for the lodestar in the game.

```

10 REM LODESTAR/3-D MAZE
20 GOSUB530
30 GOSUB370
40 M=M+1
50 PRINT "3";TAB(5);"MOVE NUMBER" M
70 PRINT "NORTH: ";
80 IF A(D+1,E)=S THENPRINT "OPEN"
90 IF A(D+1,E)=X THENPRINT "WALL"
100 PRINT "SOUTH: ";
110 IF A(D-1,E)=S THENPRINT "OPEN"
120 IF A(D-1,E)=X THEN PRINT "WALL"
130 PRINT "EAST: ";
140 IF A(D,E+1)=S THEN PRINT "OPEN"
150 IF A(D,E+1)=X THEN PRINT "WALL"
160 PRINT "WEST: ";
170 IF A(D,E-1)=S THEN PRINT "OPEN"
180 IF A(D,E-1)=X THEN PRINT "WALL"
190 PRINT "LODESTAR INDICATOR":PRINT TAB(6);"READS"100*(ABS(Z-D)
+ABS(Y-E))+Y-E
210 PRINT "DIRECTION?"
211 PRINT "NORTH SOUTH EAST WEST HELP"
215 GETA$:IFA$=""THEN215
220 IFA$="N"ANDA(D+1,E)=XTHEN 215
230 IFA$="S"ANDA(D-1,E)=XTHEN 215
240 IFA$="E"ANDA(D,E+1)=XTHEN215
250 IFA$="W"ANDA(D,E-1)=XTHEN215
260 IF A$="H" THEN GOSUB370
270 IFA$="N" THEN D=D+1
280 IF A$="S" THEN D=D-1
290 IF A$="E" THEN E=E+1
300 IF A$="W" THEN E=E-1
310 IF Z=D AND Y=E THEN 340
330 GOTO 40
340 PRINT"YOU FOUND IT IN"
350 PRINTTAB(5);"M" MOVES!!!":FORJ=1TO100:NEXTJ:GOTO340
370 REM HELP
400 PRINT "NORTH":PRINT
410 FORB=15TO1 STEP-1:FORC=1TO15
420 FORC=1TO15

```



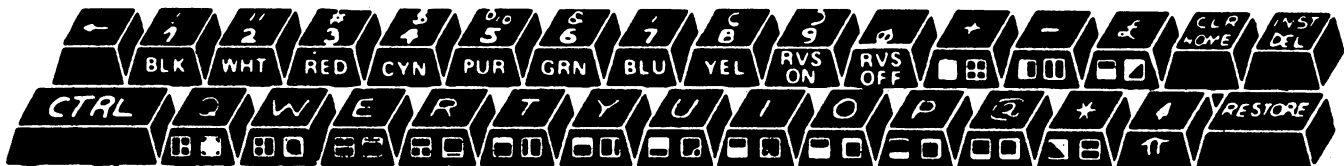
```
430 IF A(B,C)=X THEN PRINT "X";
435 IF B=D AND C=E THEN PRINT "E*"; GOTO 440
436 IF A(B,C)=S THEN PRINT "S+";
440 NEXT:PRINT:NEXT
470 PRINT "SOUTH":PRINT
480 M=M+15
490 FOR J=1 TO 2000: NEXT J
500 PRINT "J": A(D,E)=S
520 RETURN
530 DIM A(15,15)
550 B=INT(RND(1)*3)+1
560 Z=14:Y=14
570 IF B=2 THEN Y=2
580 IF B=3 THEN Z=2
590 X=1:S=2
610 FOR B=1 TO 15: FOR C=1 TO 15
630 A(B,C)=X: IF RND(1)>.9 THEN A(B,C)=S
640 IF C<20 OR C>14 OR B<20 OR B>14 THEN A(B,C)=X
650 NEXT: NEXT
670 D=2:E=2
690 FOR F=1 TO 68
700 READ B: READ C
710 A(B,C)=S
720 NEXT
730 M=-15: POKE 36879,25
740 RETURN
750 DATA 2,2,2,3,2,4,2,5,2,6,2,7
760 DATA 3,7,4,7,5,7,5,6,5,5,5,4,5,3,6,3
770 DATA 7,3,7,4,7,5,7,6,7,7,7,8,7,9,9,8
780 DATA 9,9,10,8,10,7,10,6,10,5,10,4,8,8
790 DATA 10,3,11,3,12,3,13,3,14,3,14,2,7,10
800 DATA 6,10,5,10,4,10,3,10,2,10,2,11,2,12
810 DATA 2,13,2,14,6,11,6,12,6,13,6,14,7,12
820 DATA 14,12,8,12,8,14,9,12,9,13,9,14,10,12
830 DATA 11,9,11,10,11,11,11,12,12,9,13,9,13,10
840 DATA 13,11,13,12,13,13,13,14,14,14
```

# VINCENT VAN VIC

You control a red diamond using "A" (up), "Z" (down), "," (left) and "." (right) to draw out a picture on the screen. You can stop the moving diamond at any time by pressing any key except the four indicated. You choose the color you wish the computer to use by pressing the relevant color key. Pressing a color change key will automatically stop the diamond moving, so it is "drawing" in the new color when it is started again.

The computer starts drawing in white, so it is invisible on the white background. You can therefore move the red "cursor" diamond to wherever you like before you start drawing. You can also move it anywhere on the screen during the course of a drawing, without leaving a line. Drawing in white can also be used to erase unwanted parts of the drawing.

```
10 REM VINCENT VAN VIC
20 REM MOVE RED DIAMOND WITH THE A Z , . KEYS
30 REM TO CHANGE COLOR PRESS THE NUMBER OF THE COLOUR YOU WANT
40 REM TO STOP CURSOR MOVING HIT ANY KEY EXCEPT FOR CONTROL ONES
50 PRINT "3":GOSUB9540
1000 GETA$: IFA$="" THENA$=B$
1005 IFA$>"0" AND A$<"9" THEN U=VAL(A$)-1
1010 E=C:T=S
1020 IFA$="." THEN S=S+1:C=C+1
1030 IFA$="," THEN S=S-1:C=C-1
1040 IFA$="A" THEN S=S-22:C=C-22
1050 IFA$="Z" THEN S=S+22:C=C+22
1060 IF PEEK(S)=102 THEN C=E:S=T
1070 B$=A$
1080 FOR Q=1 TO 600: NEXT
1200 POKEE,U
1210 POKEC,2:POKES,90
1230 GOTO1000
9540 S=7954
9550 C=38674
9560 B$=""
9590 FOR Z=7680 TO 7701: POKEZ,102: POKEZ+30720,0: NEXT
9600 FOR Z=8164 TO 8185: POKEZ,102: POKEZ+30720,0: NEXT
9620 FOR Z=7680 TO 8164 STEP 22: POKEZ,102: POKEZ+30720,
0: POKEZ+21,102: POKEZ+30741,0: NEXT
9630 U=1
9640 RETURN
```



# Monza

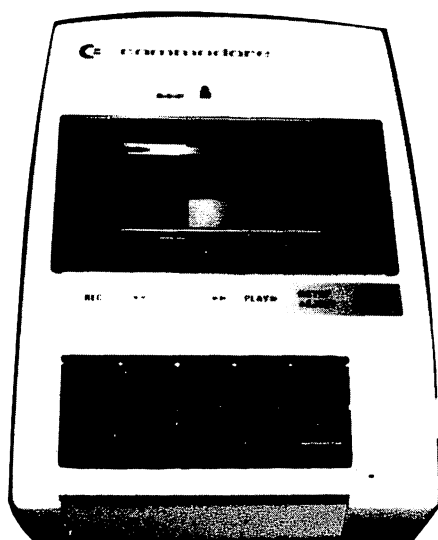
Monza is a mind-reading mathematical wizard. You first think of a number between 1 and 63. Monza displays a series of numbers on the screen, and you press 'Y' if your number is among those displayed and 'N' if it is not. After several screens of numbers have been shown, with suitably magical sounds, Monza will tell you the number you thought of. This makes a good demonstration program to show the VIC off to your friends.

```
10 REM MONZA, MATHEMATICAL WIZARD
15 B$="BEE"
20 X=.5:N=0
30 POKE36879,25
40 PRINT"THINK OF A NUMBER"
45 PRINT"BETWEEN 1 AND 63."
50 PRINT"MI WILL SHOW YOU FIVE"
55 PRINT"SCREENFULS OF"
60 PRINT "NUMBERS. IF YOUR"
65 PRINT"NUMBER IS ON THE"
70 PRINT"SCREEN, PRESS 'Y' TO"
80 PRINT"TELL ME. IF IT IS NOT"
85 PRINT TAB(8);"PRESS 'N'."
90 PRINT"MI WILL TELL YOU YOUR"
95 PRINT"NUMBER AT THE END"
100 PRINT"*****PRESS ANY KEY..."
110 GET A$:IF A$="" THEN 110
115 PRINT"***"
120 PRINT" 1 3 5 7 9 11 13 15 17"
121 PRINT"19 21 23 25 27 29 31"
122 PRINT"33 35 37 39 41 43 45"
123 PRINT"47 49 51 53 55 57 59"
124 PRINT TAB(8);"51 63"
130 PRINT
140 GOSUB 390
150 PRINT"***"
151 PRINT" 2 3 6 7 10 11 14 15"
152 PRINT:PRINT"18 19 22 23 26 27 30"
153 PRINT:PRINT"31 34 35 38 39 42 43"
154 PRINT:PRINT"46 47 50 51 54 55 58"
155 PRINTTAB(8);"59 62 63"
160 PRINT
170 GOSUB 390
180 PRINT"***"
181 PRINT" 4 5 6 7 12 13 14 15"
182 PRINT"20 21 22 23 28 29 30"
183 PRINT"31 36 37 38 39 44 45"
184 PRINT"46 47 52 53 54 55 60"
185 PRINTTAB(8);"51 62 63"
190 GOSUB 390
200 PRINT"***"
```

```

201 PRINT"8 9 10 11 12 13 14 15"
202 PRINT"X24 25 26 27 28 29 30"
203 PRINT"X31 40 41 42 43 44 45"
204 PRINT"X46 47 56 57 58 59 60"
205 PRINTTAB(8);"X61 62 63"
210 GOSUB 390
220 PRINT"X00"
221 PRINT"16 17 18 19 20 21 22"
222 PRINT"X23 24 25 26 27 28 29"
223 PRINT"X30 31 48 49 50 51 52"
224 PRINT"X53 54 55 56 57 58 59"
225 PRINTTAB(8);"X60 61 62 63"
230 GOSUB 390
240 PRINT"X00"
241 PRINT"32 33 34 35 36 37 38"
242 PRINT"X39 40 41 42 43 44 45"
243 PRINT"X46 47 48 49 50 51 52"
244 PRINT"X53 54 55 56 57 58 59"
245 PRINTTAB(8);"X60 61 62 63"
250 GOSUB 390
260 POKE 36878,15
270 FOR T=1TO255
280 POKE 36876,T
290 POKE 36876,255-T/2
300 NEXT
310 POKE 36878,0
320 POKE 36876,0

```



```

330 PRINT"YOUR NUMBER WAS"N
340 FORT=1TO4000:NEXT:RUN
390 X=X+X
395 C%=MID$(B%,(INT(RND(1)*3)+1),1)
400 POKE36878,15
410 FOR T=100 TO 255
420 POKE 36876,T-N*3
430 NEXT T
440 POKE 36878,0
450 POKE 36876,0
455 PRINT
460 PRINT C%"IF YOUR NUMBER IS"
470 PRINT"HERE PRESS 'Y', IF"
480 PRINT "NOT, PRESS 'N'."
490 GET A$
500 IF A$="" THEN 490
510 IF A$<>"N" THEN N=N+X
520 FOR T=1 TO 500
530 NEXT T
540 RETURN

```

# Mento

Mento is another mathematical mind-reading wizard. Just get your friends to follow the instructions to be amazed, pressing any key after you have followed the wizard's wise words.

```

10 REM MENTO
15 POKE 36879,8:PRINT"="
20 GOSUB1020
30 PRINT"MULTIPLY YOUR AGE BY"
40 PRINT"TWO, THEN ADD FIVE"
50 GOSUB1000
60 PRINT"NOW MULTIPLY THAT"
70 PRINT"BY FIFTY, AND"
80 PRINT"SUBTRACT 365"
90 GOSUB1000
100 PRINT"NOW ADD THE AMOUNT"
110 PRINT"OF CHANGE IN YOUR"
120 PRINT"POCKET"
130 GOSUB1000
140 PRINT"NOW GIVE ME THE"
150 PRINT"NUMBER YOU'VE ENDED"
160 PRINT"UP WITH"
170 INPUTA:A=A+115
180 B%=A/100

```

```

190 A=A-BX#100
200 PRINT"YOU HAVE"A"CHANGE."
210 PRINT
220 PRINT"YOU ARE"BX"YEARS OLD"
230 END
1000 GETA$
1010 IFA$=""THEN GOTO1000
1020 PRINT"□"
1030 PRINT"○○○○"
1040 RETURN

```

READY.

# Flip

Flip is an intriguing game, which provides quite a bit of mental stimulation. On a three-by-three grid are randomly placed solid (filled in) and empty circles. By flipping them (see the following for an explanation of the flip), you have to end up with a single empty circle in the middle position and solid circles in the other eight positions.

You can only flip a solid circle. You move by entering the number of the piece you wish to flip. Flipping a corner piece causes those adjoining it to change to their opposites (that is, a solid circle opens up, an open circle solidifies). Flipping middle circle on one side changes the two on either side of it, and flipping the middle one changes the middle piece on all four sides. The piece you flip also changes.

The number of moves you have taken so far is displayed. At the end of the game, the program will pause to tell you how many moves it took to solve it, and then you'll be given a new starting position.

```

5 REM FLIP
10 M=0:Q=209:X=215
20 FORC=1TO9
30 B=INT(RND(1)+.5)
35 A(C)=Q:IFB=0THEN A(C)=X
40 NEXTC
50 GOSUB180
60 N=0
70 FORC=1TO9
80 IFA(C)=XTHEN N=N+1
90 NEXTC
100 IFN=1AND A(5)=XTHEN GOTO270
110 M=M+1
115 PRINT"MOVE NO."M:PRINT:PRINT
120 PRINT"WHICH ONE TO CHANGE"
125 GETA$:IFA$=""THEN125

```

```

126 N=VAL(A$):IFN<10RND>9THEN125
130 GOSUB310
140 GOTO50
170 END
180 PRINT"J"
190 PRINT:PRINT:PRINT
200 PRINT"■"1" "2" "3" "CHR$(A(1))" "CHR$(A(2))" "CHR$(A(3))
210 PRINT
220 PRINT"■"4" "5" "6" "CHR$(A(4))" "CHR$(A(5))" "CHR$(A(6))
230 PRINT
240 PRINT"■"7" "8" "9" "CHR$(A(7))" "CHR$(A(8))" "CHR$(A(9))
250 PRINT
260 RETURN
270 PRINT"SOLVED IN"M
280 FORT=1T05000
290 NEXT
300 RUN
310 IFA(N)=XTHENRETURN
320 IFN=1THENF(1)=2:F(2)=4:F(3)=5:F(4)=10
330 IFN=2THENF(1)=1:F(2)=3:F(3)=10:F(4)=10
340 IFN=3THENF(1)=2:F(2)=5:F(3)=6:F(4)=10
350 IFN=4THENF(1)=1:F(2)=7:F(3)=10:F(4)=10
360 IFN=5THENF(1)=2:F(2)=4:F(3)=8:F(4)=6
370 IFN=6THENF(1)=3:F(2)=9:F(3)=10:F(4)=10
380 IFN=7THENF(1)=4:F(2)=5:F(3)=8:F(4)=10
390 IFN=8THENF(1)=7:F(2)=9:F(3)=10:F(4)=10
400 IFN=9THENF(1)=8:F(2)=5:F(3)=6:F(4)=10
410 POKE36878,15
420 FORG=1T04
425 POKE36879,24+RND(1)*8
427 POKE36875,130+RND(1)*100
430 IFA(F(G))=XTHENA(F(G))=Q:GOTO450
440 IFA(F(G))=QTHENA(F(G))=X
450 NEXTG
455 POKE36875,0:POKE36878,0
460 A(N)=X
470 RETURN

```

# Colormind

This, as you've probably guessed, is a color version of Mastermind™. You have to guess the computer's pattern of four differently colored blobs. You indicate your choice of colors by pressing the color keys on the VIC.

The colors will first print up as the numbers you pressed, then change into blobs colored to your choice. Following the blobs will be your score, the first number being the correct color in the correct position, the second the correct color in the wrong position. You'll get ten tries to guess the numbers. Note that no color is repeated within the set of blobs.



If you're used to playing Mastermind™ with colored pegs, you'll quickly appreciate that this is much closer to the Invicta game than are computer versions that use numbers. At the end of the game, press any key to get a new game, or 'S' to stop.

```

10 REM COLOURMIND
15 PRINT "J":PRINT:PRINT
20 GOSUB450
30 C(1)=INT(RND(1)*6)+3
35 Z=2
40 C(Z)=INT(RND(1)*6)+3
50 J=1
60 IFC(J)=C(Z)THEN35
70 IFJ<Z-1THENJ=J+1:GOTO60
80 IFZ<4THENZ=Z+1:GOTO40
100 FORH=1TO10:INPUTA
130 FORZ=1TO4
140 G(Z)=A-10*INT(A/10)
150 A=INT(A/10)
160 NEXT
165 GOSUB510
170 B=0:W=0
190 FORZ=1TO4
200 IFC(Z)<>G(Z)THEN230
210 G(Z)=0
220 B=B+1
230 NEXT
240 FORZ=1TO4
250 IFG(Z)=0THEN300
260 FORJ=1TO4
270 IFC(Z)<>G(J)THEN290
280 W=W+1
290 NEXT
300 NEXT
320 PRINT " - ■" B " ■" W
370 IFB=4THEN1000
380 NEXTH
390 GOTO1010
440 END
450 A$=" ■■■■"
460 FORB=3TO8
470 PRINTMID$(A$,B,1);B;"● ";
475 IFB=5THENPRINT
480 NEXT
490 PRINT"■":PRINT
500 RETURN
510 PRINT"J";
515 FORZ=4TO1STEP-1
520 PRINTMID$(A$,G(Z),1);"● ";
530 NEXT
550 RETURN
1000 PRINT"YOU GUESSED IT!"
1010 PRINT"THE CODE WAS:"

```

```

1015 PRINT" ";TAB(5);
1020 FORZ=4TO1STEP-1
1030 PRINTMID$(A$,C(Z),1);" ";
1040 NEXT
1050 GETA$: IFA$=""THEN1050
1060 IFA$="S"THENEND
1070 RUN

```

# Cannibal Charlie

You get to play God in Cannibal Charlie. You specify how many cannibals there will be at the start of creation, and how many explorers. Your aim is to create a society that survives as long as possible. Too few explorers, and the society will die within a month or so. Too many explorers, and they'll overwhelm the cannibals, again bringing things to halt within the first month. The program gives you a population reading at the end of each month. There is a "highest score" (i.e., longest survival of a particular society) feature, so you can try to out-God yourself. If you don't like the scenario, you can change it to foxes and rabbits, or any predator/prey combination you prefer.

The variable FD (food, set in line 100) determines how many cannibals can feast on a single explorer. Although this does not change within a single series of games, it will be different each time you run the program from the beginning.

```

10 REM CANNIBAL CHARLIE
20 PRINT"WELCOME WELCOME TO CANNIBAL CHARLIE CHARLIE"
30 PRINT"IN IN THIS GAME YOU ARE GOD GOD, AND IT IS YOUR JOB TO
  SET UP THE"
40 PRINT"RULES FOR CANNIBALS AND EXPLORERS IN SUCH A WAY THAT
  THE SOCIETY";
50 PRINT"LASTS FOR THE LONGEST POSSIBLE TIME. PRESS PRESS
  ANY KEY WHEN"
60 PRINT"YOU'RE READY TO PLAY"
70 GETA$: IFA$=""THEN70
80 HI=0
100 FD=RND(0)
110 PRINT"HOW HOW FINE, GOD. NOW HOW MANY CANNIBALS WILL WE";
120 PRINT"START WITH <<100>?"
125 INPUTCP: IFCP>99THEN125
170 PRINT"THE CANNIBALS:"
180 PRINT"THE POPULATION:"CP
190 CP=CP/3
210 PRINT"HOW NOW, THEM EXPLORERS:"
220 INPUT"POPULATION <<100>";EP
225 IFEF>99THEN220
230 EP=EP/3
250 PRINT"PLEASE PLEASE STAND BY"
260 GOSUB1000:PRINT" "
270 DA=0:CS=CS/2:ES=ES/2
280 DA=DA+1

```

```

290 PRINT"100MONTH"DA: IFDA=1THEN300
300 IFCP>EP/FDTHENCP=EP/FD
310 CP=CP+((8*CP-CP*EP/3)*FD)
320 EP=EP+((4*EP-EP*CP)*.01)
330 PRINT"1000"INT(CP)"CANNIBALS"
340 PRINT"1000"INT(EP)"EXPLORERS"
350 IFEP<2ORCP<2THEN390
360 GOSUB1000
370 GOTO280
390 IFDA>HS THEN HS=DA
395 IFCP<10REP<1THENPRINT"J"
400 PRINT"THEEND OF THE LINE, GOD"
410 PRINT"THESOCIETY SURVIVED FOR"DA"MONTHS"
420 PRINT"BEST SO FAR IS"HS
430 PRINT"INPUT 'Y' FOR A NEW CREATION, ANY OTHER KEY TO STOP"
440 GETA$: IFA$=""THEN440
450 IFA$="Y"THEN110
460 PRINT"BYE BYE, YOUR ALMIGHTYNESS"
470 END
1000 FORY=1TO4000:NEXT
1010 RETURN

```

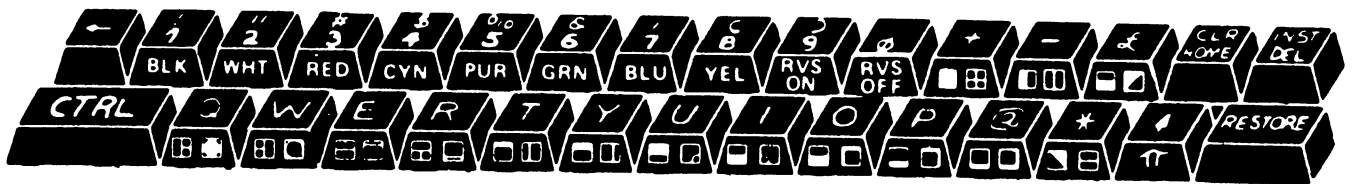
# Monte Carlo Molecule

The general term "Monte Carlo Simulations" is given to those simulations that show the result of chance factors. Brownian motion and atomic diffusion are examples of random motion that can be emulated with a Monte Carlo simulation. In Monte Carlo Molecule, a molecule, starting at any position you designate on a ten-by-ten grid (we suggest you try 5,5 as your first one), works it way randomly around a small box until it happens to find its way to the bottom right-hand corner (coordinates 10,10) counting the number of moves it took to get there.

```

10 REM MONTECARLO MOLECULE
20 PRINT"J": DIMA(10,10): M=0
25 GOSUB1500: REM START
30 GOSUB500: REM PRINT
35 IFP=10ANDQ=10THEN35
40 GOSUB1000: REM FIND A DIRECTION
60 GOTO30
500 REM PRINT
505 A(P,Q)=209: M=M+1
510 PRINT"1000MOVE NO. "M
515 PRINT"100"
520 FORX=1TO10
530 FORY=1TO10
540 PRINTCHR$(A(X,Y));
550 NEXT: PRINT: NEXT

```



```

560 RETURN
1000 REM DIRECTION
1010 A(P,Q)=214
1015 G=0
1020 T=INT(RND(0)*8)
1030 IFT=0THEN GOSUB1100
1035 IFT=4THEN GOSUB1120
1040 IFT=1THEN GOSUB1200
1045 IFT=5THEN GOSUB1130
1050 IFT=2THEN GOSUB1110
1055 IFT=6THEN GOSUB1140
1060 IFT=3THEN GOSUB1210
1065 IFT=7THEN GOSUB1150
1070 IF G=0 THEN 1020
1080 RETURN
1100 IF P>1 THEN P=P-1:G=1
1105 RETURN
1110 IF P<10 THEN P=P+1:G=1
1115 RETURN
1120 IF P>1 AND Q>1 THEN P=P-1:Q=Q-1:G=1
1125 RETURN
1130 IF P<10 AND Q<10 THEN P=P+1:Q=Q+1:G=1
1135 RETURN
1140 IF P<10 AND Q>1 THEN P=P+1:Q=Q-1:G=1
1145 RETURN
1150 RETURN
1200 IF Q>1 THEN Q=Q-1:G=1
1205 RETURN
1210 IF Q<10 THEN Q=Q+1:G=1
1215 RETURN
1500 REM START
1510 FOR X=1 TO 10
1520 FOR Y=1 TO 10
1530 A(X,Y)=214
1540 NEXT Y:NEXT X
1550 PRINT "THE CO-ORDINATES OF "
1560 INPUT "START POSITION";P,Q
1570 IF P<1 OR P>10 OR Q<1 OR Q>10 THEN 1550
1580 A(P,Q)=209
1590 PRINT "J"
1600 RETURN

```

# Noughts and Crosses

You are the red filled-in circles, the computer the inverse blue crosses. You just touch the number where you want to place a piece, and the VIC will do the rest. The computer will ignore any opening move that is not the center square (5). This program is based on one written by Stuart Roberts.

```
10 REM NOUGHTS AND                CROSSES
12 REM
15 REM AFTER PROGRAM              BY STUART ROBERTS
16 REM
20 FORA=1TO9:B(A)=A:NEXT
30 PRINT "  "
50 E=0:Q=0
60 N=0
70 X=4
80 PRINT "  "
90 FORA=1TO9
100 IFA=XTHENX=X+3:PRINT:PRINT
110 IFB(A)=0THEN320
120 IFB(A)=10THEN350
130 PRINTB(A);" ";
140 NEXT
145 IFB(3)=10ANDB(6)=10ANDB(9)=10THENE=8:GOTO160
146 IFB(7)=10ANDB(8)=10ANDB(9)=10THENE=8:GOTO160
150 IFN=1THEN380
160 IFE=8THENPRINT:PRINT:PRINT"          I WIN":GOTO730
170 IFQ=5THENPRINT:PRINT:PRINT"        IT'S A DRAW":GOTO730
180 PRINT"XOXXXXXXXXXYOUR MOVE?"
185 GETA$:IFA$=""THEN185
187 Z=VAL(A$)
190 IFB(Z)<>ZTHEN185
200 Q=Q+1
210 IFZ=11THENB(5)=10:GOTO60
220 N=N+1:B(Z)=0
230 GOTO70
240 FORA=CTOD
250 IFB(A)=ATHENB(A)=10
260 A=A+F
270 NEXT
280 GOTO60
290 IFB(5)=5THEN20
300 B(D)=10
310 GOTO60
320 PRINT"  ●  X  ";
330 P(A)=1
340 GOTO140
350 PRINT"  X  ●  ";
360 P(A)=4
```



```

370 GOTO140
380 G=0
390 C=1:D=9:F=3
400 GOSUB580
410 C=3:D=7:F=1
420 GOSUB580
430 D=9:F=2
440 GOSUB580
450 C=2:D=8
460 GOSUB580
470 C=1:D=7
480 GOSUB580
490 D=3:F=0
500 GOSUB580
510 C=4:D=6
520 GOSUB580
530 C=7:D=9
540 GOSUB580
550 G=G+1
560 IFG=5THEN60
570 GOTO390
580 E=0
590 FORA=CTOD
600 E=E+P(A):A=A+F
610 NEXTA
620 IFE=3THEN720
630 IFG=0THENRETURN
640 IFE=3THEN240
650 IFG=1THENRETURN
660 IFE=2THEN240
670 IFG=2THENRETURN
680 IFE=5THEN240
690 IFG=3THENRETURN
700 IFE=10RE=4THEN290
710 RETURN
720 PRINT:PRINT:PRINT"          YOU WIN"
730 FORT=1TO3000:NEXT
740 RUN

```

# Sepulcher Organ

Sounding like a mournful choir in full cry in a haunted house, this program lets you play the bottom row of keys of the VIC as though it is an organ. The notes corresponding to the keys are:

C (Z), D (X), E (C), F (V), G (B), A (N), B (M), C' (,)

The note you've pressed will continue until you press another key. Touching any other key from those marked will stop the sound. RUN STOP will, of course, stop the program.

Here is TWINKLE, TWINKLE LITTLE STAR:

```
ZZ BB NN B
VV CC XX Z
BB VV CC X
BB VV CC X
ZZ BB NN B VV CC XX Z
```

```
10 REM SEPULCHER ORGAN
12 PRINT"J"
15 DIMB(16),C$(16)
20 FORA=1TO16
30 READB(A):READC$(A)
40 NEXTA
50 DATA135,"Z",147,"X",159,"C",165,"V",175,"B",183,"N",191,"M",
195,"","
55 DATA225,"Z",228,"X",231,"C",232,"V",235,"B",237,"N",239,"M",
240,"","
60 POKE36878,15
70 GETA$
80 FORA=1TO8
90 IFA$=C$(A)THENPOKE36876,B(A):POKE36875,B(A):POKE36874,B(A):
POKE36876,B(A+8)
100 NEXTA
110 IFA$="."THENGOTO150
140 GOTO70
150 POKE36876,0
160 POKE36875,0
170 POKE36874,0
190 GOTO70
```

# Speedway

Drive your little car around the track under control of the joystick or keyboard ("A" = up, "Z" = down, ",", " = left, "." = right) at a choice of nine different skill levels. Your score is related both to the skill level and to the length of time you manage to keep your car going without hitting the boundaries of the track.

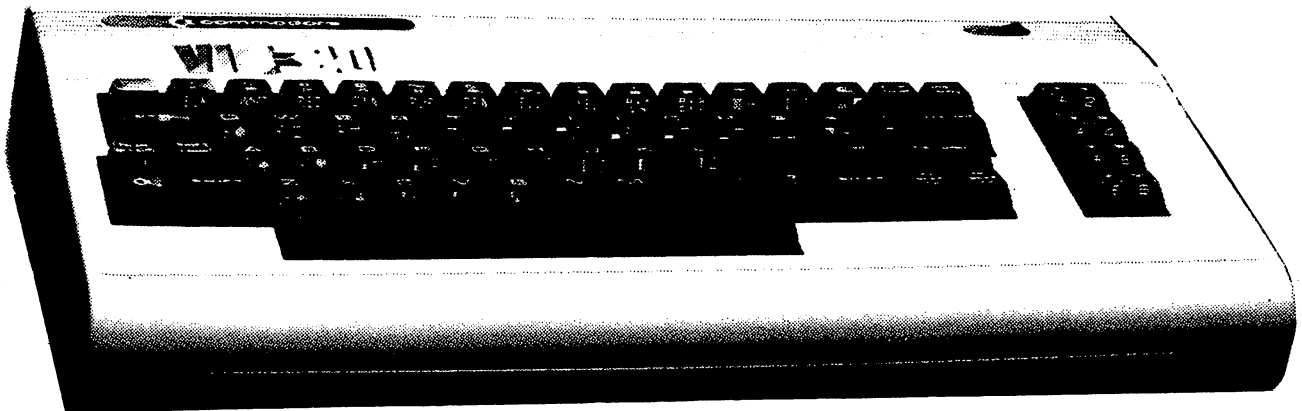
There is a highest score feature, so you can compete against yourself in subsequent runs. Your current score is clocked up continuously in the top righthand corner of the screen. Once you're familiar with the game in its present form, change the racetrack (from line 8040) to one of your own design, or write a routine to produce a different racetrack each time you play the game.

```
10 REM SPEEDWAY
15 REM KEYBOARD VERSION
20 HS=0
30 GOSUB8000:REM INITIALISE
40 GOSUB520:REM MOVE CAR
50 IFA=0THENGOTO40
60 GOTO700:REM SMASH
```

```

100 REM NOISE
110 POKE36878,15
120 POKE36875,RND(0)*10+140
130 FORT=1T010*SK
140 NEXT
150 POKE36878,0
160 POKE36875,0
170 RETURN
520 REM MOVE CAR
530 GOSUB100:REM NOISE
540 IFPEEK(7680+CA+22*CD)=102THENA=1
560 POKE(7680+CA+22*CD),35
570 POKE(38400+CA+22*CD),4
580 AE=CA:ED=CD
590 GETA$
600 IFA$=""THENA$=B$:GOTO620
605 IFA$<"A"THENIFA$<"Z"THENIFA$<"",THENIFA$<"",THENA$="."
620 IFA$="A"ANDCD>2THENCDCD-1
630 IFA$="Z"ANDCD<22THENCDCD+1
640 IFA$="",ANDCA>1THENCA=CA-1
650 IFA$="",ANDCA<20THENCA=CA+1
655 B$=A$
656 SC=SC+1
660 POKE(38400+AE+22*ED),1
690 RETURN
700 REMCRASH
710 POKE36878,15
720 FORY=150T0250STEP5
730 POKE36877,Y
740 FORT=1T0Y/5:NEXT
750 NEXT
760 POKE36878,0:POKE36877,0
765 SC=SC*(10-SK)
770 PRINT"#####YOU SCORED"SC
780 IFHS<SCTHENHS=SC
790 PRINT"#####HIGH SCORE IS"HS
800 FORT=1T02000:NEXT
810 GOTO30
8000 REMINTIALISE

```







```

655 B=X:IFX=22THENX=-22
656 SC=SC-X:PRINT"SCORE"SC*(10-SK)
660 POKE(38400+AE+22*ED),0
690 IFA=0THEN520
710 POKE36878,15
720 FORT=150T0250STEP5
730 POKE36877,Y
740 FORT=1T0Y/5:NEXT
750 NEXT
760 POKE36878,0:POKE36877,0
765 SC=SC*(10-SK)
770 PRINT"YOU SCORED"SC
780 IFHS<SCTHENHS=SC
790 PRINT"HIGH SCORE IS"HS
800 FORT=1T0200:NEXT
810 GOT030
2000 POKEDD,127:S3=-((PEEK(PB)AND128)=0):POKEDD,255
2010 P=PEEK(PA):S1=-((PAND8)=0):S2=((PAND16)=0):S0=((PAND4)=0)
2020 FR=-((PAND32)=0):X=S2+S3:Y=S0+S1
2030 X=-JS(X+1,Y+1)
2040 RETURN
8000 REMINITIALISE
8005 PRINT"J"
8007 POKE36879,8
8010 A=0:REM CRASH FLAG
8012 GOSUB9000
8015 SC=0:REM SCORE
8020 CA=2:CD=3:REM STARTING POSITION OF CAR
8030 B=-1
8040 PRINT"J";
8050 PRINT" ";
8060 PRINT" ";
8070 PRINT" ";
8080 PRINT" ";
8090 PRINT" ";
8100 PRINT" ";
8110 PRINT" ";
8120 PRINT" ";
8130 PRINT" ";
8140 PRINT" ";
8150 PRINT" ";
8160 PRINT" ";
8170 PRINT" ";
8180 PRINT" ";
8190 PRINT" ";
8210 PRINT" ";
8220 PRINT" ";
8230 PRINT" ";
8240 PRINT" ";
8250 PRINT" ";
8260 PRINT" ";
8265 IFHS<>0THENRETURN
8270 DIMJS(2,2):POKE37139,0:DD=37154:PA=37137:PB=37152

```

```

8280 FORT=0T02:FORJ=0T02:READJS(J,T):NEXTJ,T
8290 DATA0,-22,0,-1,0,1,0,22,0
8500 RETURN
9000 PRINT"ENTER YOUR SKILL"
9010 PRINT"LEVEL (1 TO 9)"
9020 GETB$:SK=VAL(B$)
9030 IFSK<1ORSK>9THEN9020
9040 RETURN

```

READY.

## Battle

In this board game, which is somewhat like checkers (except for the size of the board and the method of capture), you are the bottom of the screen playing up, and the computer is at the top playing down.

The computer always has the first move. The aim, as in checkers, is to capture your opponent's men, but unlike checkers you capture by landing on a piece, rather than by jumping over it. You move by responding to the prompt FROM? with the number across the bottom of the square you wish to move from, then a comma, then the number along the side. You do the same for the "to" square. A move, then, might be:

```

FROM? 6,2
TO? 5,3

```

The winner is the first player to capture six of the opponent's pieces. Battle was written by Chris Callender, of Cove, Helensburgh.

```

5 REM BATTLE - CHRIS CALLENDER
10 DATA"123456789"
20 DATA"1●●●●●●●1"
30 DATA"2●●●●●●2"
40 DATA"3●●●●●3"
50 DATA"4●●●●4"
60 DATA"5●●●5"
70 DATA"6●●●●6"
80 DATA"7●●●●7"
90 DATA"8●●●●8"
100 DATA"123456789"
105 HS=0:CS=0
110 DIMS$(12,13)
120 FORA=1TO10
130 READB$
140 FORB=1TO11:S$(A,B)=MID$(B$,B,1):NEXTB:NEXTA
141 IFINT(RND(1)+.5)=0THEN145
142 S$(5,5)="●":S$(5,7)=" "

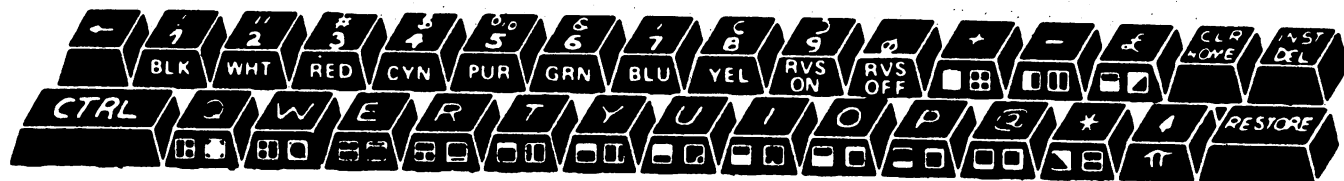
```



```

145 POKE36879,25:PRINT"J"
150 GOSUB1130
155 PRINT:PRINT:PRINT
157 IFCS=6THENPRINT"I WIN!!":STOP
160 INPUT"FROM";A,B
170 INPUT"TO";C,D
180 IFABS(A-C)=1ANDABS(B-D)=1THEN220
190 PRINT"ILLEGAL MOVE":GOTO160
220 IFS$(C+1,D+1)="●"THENHS=HS+1
230 S$(A+1,B+1)=" ":S$(C+1,D+1)="♣"
240 GOSUB1130
245 PRINT:PRINT:PRINT:PRINT"          ":PRINT"          "
247 IFHS=6THENPRINT"YOU WIN!!":STOP
250 A$="♣":GOSUB1000
260 IFFL=1THEN300
270 A$=" ":GOSUB1000
300 S$(E,F)=" "
305 IFS$(E+G,F+H)="♣"THENC$=C$+1
310 S$(E+G,F+H)="●"
320 GOTO150
1000 M E=2:F=2:G=0:H=0
1010 FL=0
1020 IFS$(E,F)<>"●"THEN1100
1040 IFS$(E+1,F+1)=A$THENG=1:H=1
1050 IFS$(E+1,F-1)=A$THENG=1:H=-1
1060 IFS$(E-1,F+1)=A$THENG=-1:H=1
1070 IFS$(E-1,F-1)=A$THENG=-1:H=-1
1080 IFG<>0ANDH<>0THENFL=1:RETURN
1100 E=E+1:IFE>10THENE=2:F=F+1
1110 IFF>11THENRETURN
1120 GOTO1010
1130 PRINT"♣":FORA=1TO10:PRINT:FORB=1TO11
1140 PRINT"♣";:IFS$(A,B)="●"THENPRINT"♣";
1145 IFS$(A,B)="♠"THENPRINT"♠";
1150 IFS$(A,B)="♣"THENPRINT"♣";
1155 PRINTS$(A,B);
1160 NEXT:NEXT
1170 PRINT:PRINT:PRINT"GAME:"CS,"YOU:"HS"
1180 RETURN

```



# Reverse

In this brain-boiler, the computer randomly mixes the numbers from zero to nine, and you have to put them in order in as few 'reverses' as you can. I'll explain what a "reverse" is. If the computer had generated the sequence 5924861703 and entered 1 in response to the question "REVERSE NUMBER?", the sequence would be reprinted as 3071684295. Entering 4 would then produce 3075924861. That is the digits from position four to the end would be reversed. As you can see from line 170, the sequence the computer is looking for is 0123456789. Get the numbers in that order and the game is over. It may well take you 40 or so moves to order the digits, unless you're particularly clever—or lucky.

```
10 REM REVERSE
20 M=1:X=0:A$="":PRINT"3"
30 FORT=0T09
40 L=INT(RND(1)*10)+48
50 Q=1
60 IFMID$(A$,Q,1)=CHR$(L)THEN40
70 IFQ<T THENQ=Q+1:GOTO60
80 A$=A$+CHR$(L)
90 NEXT
100 PRINT"MOVE NO."M:PRINT"A$;"
110 INPUT"REVERSE NUMBER";R:IFR<1ORR>9THEN110
120 B$=""
130 FORT=10T0RSTEP-1
140 B$=B$+MID$(A$,T,1)
150 NEXTT
160 A$=LEFT$(A$,R-1)+B$
170 IFA$="0123456789"THEN190
180 M=M+1:GOTO100
190 PRINT"YOU DID IT!!"
195 PRINT"A$"
200 PRINT"IT TOOK"M"MOVES"
```

# Space Fighter

You pilot your V-wing space craft across the void, trying to hit the numbers that appear at random on the screen. You must be quick, for they only stay there a short time. Your score is related to the number you run over. The sound effects and the appearance of the V-wing are very effective, and you may well wish to use these in other space fight programs you write.

As usual, you control your ship with "A" (up), "Z" (down), ",", (left), and "." (right).

```

10 REM SPACE FIGHTER
15 HS=0
20 RESTORE
25 GOSUB9490
1000 GETA$: IFA$="" THEN A$=B$
1005 PRINT"第  次 SCORE" SC
1010 E=C:Q=S:V1=V
1020 IFA$="." THEN S=S+1:C=C+1:V=62
1030 IFA$="," THEN S=S-1:C=C-1:V=60
1040 IFA$="A" THEN S=S-22:C=C-22:V=1
1050 IFA$="Z" THEN S=S+22:C=C+22:V=22
1060 W=PEEK(S)
1070 IFW=102 THEN C=E:S=Q:V=V1
1075 F=0
1080 IFW>48 THEN IFW<58 THEN SC=SC+W*791:F=1:POKE36878,15:POKE36877,0
1086 IFF=1 THEN FORT=135 TO 230:POKE36875,T: NEXT:POKE36875,0
1087 POKE36878,7:POKE36877,2*ASC(A$)+70
1090 IFRND(0)>.93 THEN POKEC(CC),0:POKEB(CC),48:CC=CC+1:POKEB(CC),
    A(CC):POKEC(CC),7
1100 IFCC=55 THEN 3000
1200 POKEE,0
1210 POKEC,7:POKES,V
1220 B$=A$
1230 GOTO1000
3000 PRINT"双  人  时  间  是  上  午"
3010 PRINT"双  人  时  间  你  得  分" SC
3020 IFHS<S THEN HS=S
3030 PRINT"双  人  时  间  高  分  数  : " HS
3035 POKE36878,0
3040 FORT=1 TO 3000: NEXT
3050 GOTO20
9490 PRINT"  "
9540 S=7726
9550 C=38446
9570 B$="."
9590 FORZ=7702 TO 7723:POKEZ,102:POKEZ+30720,7: NEXT
9600 FORZ=8164 TO 8185:POKEZ,102:POKEZ+30720,7: NEXT
9620 FORZ=7680 TO 8164 STEP 22:POKEZ,102:POKEZ+30720,7:POKEZ+21,
    102:POKEZ+30741,7: NEXT
9625 IFHS<>0 THEN 9640
9630 DIMA(55),B(55),C(55)
9640 FORZ=1 TO 55
9650 A(Z)=INT(RND(0)*9)+49
9660 B(Z)=7704+INT(RND(0)*458)
9665 C(Z)=B(Z)+30720
9670 IFPEEK(B(Z))=102 THEN 9660
9680 NEXT
9690 CC=1
9700 V=60
9710 SC=0:IFHS=0 THEN HS=1
9720 POKE36879,10
9999 RETURN

```

# Zodiac Fortune Teller

Zodiac Fortune Teller, written by A.G.T. Stevens, uses a question-and-answer method to get the VIC to earn its keep providing sideshow entertainment. The results should not be taken too seriously.

```
5 PRINT"☺"
10 GOSUB 840
20 PRINT
30 PRINT"☺WILL YOU PLEASE "
40 PRINT" TELL ME YOUR NAME"
50 INPUT A$
60 PRINT"☺"
65 GOSUB 840
67 PRINT
70 PRINT"☺THANK YOU ";A$
80 PRINT
90 PRINT"☺WILL YOU NOW PLEASE"
100 PRINT" TELL ME YOUR BIRTHDAY"
110 PRINT
120 PRINT"☺GIVE ME 4 NUMBERS"
130 PRINT
140 PRINT"☺MONTH FIRST"
150 PRINT" 01<JAN>-12<DEC>"
160 PRINT
170 PRINT" FOLLOWED BY DAY"
180 PRINT" 01 - 31"
190 INPUT B
200 PRINT"☺"
210 GOSUB 840
220 PRINT
225 PRINT"☺ YOU WERE BORN UNDER"
230 PRINT" THE SIGN OF -"
240 PRINT
250 IF B>=0101 AND B<=0120 OR B>=1223 AND B<=1231 THEN PRINT" CAPRICORN"
260 IF B>=0121 AND B<=0219 THEN PRINT" AQUARIUS"
270 IF B>=0220 AND B<=0321 THEN PRINT" PISCES"
280 IF B>=0332 AND B<= 420 THEN PRINT" ARIES"
290 IF B>=0421 AND B<=0521 THEN PRINT" TAURUS"
300 IF B>=0522 AND B<= 0621 THEN PRINT" GEMINI"
310 IF B>=0622 AND B<=0723 THEN PRINT" CANCER"
320 IF B>=0724 AND B<=0823 THEN PRINT" LEO"
330 IF B>=0824 AND B<=0923 THEN PRINT" VIRGO"
340 IF B>=0924 AND B<=1023 THEN PRINT" LIBRA"
350 IF B>=1024 AND B<=1122 THEN PRINT" SCORPIO"
360 IF B>=1123 AND B<=1222 THEN PRINT" SAGITTARIUS"
370 PRINT
380 PRINT"SHALL I TELL"
390 PRINT"YOUR FORTUNE ";A$;"?"
```

```

400 PRINT
410 PRINT"      PRESS Y OR N"
420 INPUT C$
430 IF C$="Y"THEN PRINT"Y"
431 IF C$="Y"THEN GOSUB 840
440 IF C$="N" THEN GOTO 829
450 PRINT
460 J=INT(10*RND(1))+1
470 IF J=1 THEN PRINT"BITCHY PALM?A CASH      WINDFALL COULD BE DUE"
480 IF J=2 THEN PRINT"BEWARE!A FINANCIAL    DEAL COULD LOSE      YOU MONEY"
490 IF J=3 THEN PRINT"AN ACQUAINTANCE MAKES  ATTRACTIVE PROPOSAL  BE CAREFUL!"
"
500 IF J=4 THEN PRINT"INVEST SPARE MONEY      WISELY"
510 IF J=5 THEN PRINT"AVOID INDECISION STICK  TO EXISTING PLANS"
520 IF J=6 THEN PRINT"YOU ARE ENTERING        A SUCCESSFUL PHASE"
530 IF J=7 THEN PRINT"IMPORTANT TO KEEP ON    GOOD TERMS WITH      EVERYBODY"
540 IF J=8 THEN PRINT"AMBITIOUS PLANS COULD  BE IN YOUR FAVOUR"
550 IF J=9 THEN PRINT"IF YOU HAVE PREVIOUSLY  FAILED-TRY AGAIN"
560 IF J=10 THEN PRINT"NEW INTERESTS COULD    BRING FRESH BENEFITS"
570 FOR T=1 TO 150:NEXT T
580 PRINT
590 K=INT(10*RND(1))+1
600 IF K=1 THEN PRINT"CERTAIN PEOPLE MAY BE  ANYTHING BUT HELPFUL"
610 IF K=2 THEN PRINT"AVOID EMOTIONAL        ENTANGLEMENTS"
620 IF K=3 THEN PRINT"AN INTERVIEW OR MEET-  -ING COULD BRING MORE SECURITY"
630 IF K=4 THEN PRINT"SOCIAL LIFE COULD      PROVIDE MORE VARIETY"
640 IF K=5 THEN PRINT"FA BUSY MONTH AHEAD IS  INDICATED"
650 IF K=6 THEN PRINT"NOT AN ENERGETIC MONTH  AHEAD BUT TRY TO VARY YOUR ACTIVI
TIES"
660 IF K=7 THEN PRINT"MAKE SURE YOU ARE NOT   CAUGHT OFF GUARD     LATER NEXT M
ONTH"
670 IF K=8 THEN PRINT"YOU MAY NEED HELP FROM  CLOSE CONTACTS"
680 IF K=9 THEN PRINT"IFALL IN WITH OTHERS   ARRANGEMENTS"
690 IF K=10 THEN PRINT"SOME KIND OF FAMILY     REUNION COULD TAKE   PLACE"
700 FOR S=1 TO 150:NEXT S
710 PRINT
720 L=INT(10*RND(1))+1
730 IF L=1 THEN PRINT"PRESS ON WITH OUTDOOR  ACTIVITIES"
740 IF L=2 THEN PRINT"PLANETARY INFLUENCES   FAVOUR TRAVEL"
750 IF L=3 THEN PRINT"AN OPPORTUNITY WILL    ARISE GIVE IT CAREFUL CONSIDERATI
ON"
760 IF L=4 THEN PRINT"THIS MONTH IS FAVOUR-  -ABLE FOR AGREEMENTS"
770 IF L=5 THEN PRINT"TESTING TIME AHEAD     BE PREPARED!"
780 IF L=6 THEN PRINT"BE FASHIONABLE BUY     A NEW OUTFIT"
790 IF L=7 THEN PRINT"TRY TO CUT DOWN ON     INESSENTIALS OTHER-  -WISE PROBL
EMS!"
800 IF L=8 THEN PRINT"SUPERIORS COULD BE     DIFFICULT BE FIRM    BUT COURTEO
US"
810 IF L=9 THEN PRINT"FA FRIEND MAY HAVE     PROBLEMS TRY TO BE   HELPFUL"
820 IF L=10 THEN PRINT"OFFERS OF HELP MAY BE  REFUSED-PERSIST YOU  ARE NEEDED"
825 END
829 PRINT"Y"
830 PRINT "ALL RIGHT THEN      ";A$;" BYE BYE"

```



```

831 END
840 PRINT TAB(3); " "
850 PRINT TAB(3); " "
860 PRINT TAB(3); " "
870 PRINT TAB(3); " "
880 PRINT TAB(3); " "
890 POKE 36878,15
900 FOR L=1 TO 100
910 POKE 36876,INT(RND(1)*128)+128
920 FOR M=1 TO 10
930 NEXT M
940 NEXT L
950 POKE 36876,0
960 POKE 36878,0
970 RETURN

```

READY.

# Engulf

In this game, you are moving about (most musically, as you'll hear) trying to avoid being trapped by the colored blocks the computer is placing on the screen. You have to keep moving as long as you can. Eventually, thanks to the clever VIC, you become engulfed by blocks and will not be able to move any more. You'll be given a score related to how long you managed to remain free.

Your movements are controlled by the same keys as in *Zombie Island*—"A" = up, "Z" = down, ",", " = left, and "." = right.

```

10 REM ENGULF
20 GOSUB9490
30 SC=0:REM SCORE
1000 GETA$:IFA$=" "THENA$=B$
1010 E=C:Q=S
1020 IFA$=","THENS=S+1:C=C+1:N=195
1030 IFA$=","THENS=S-1:C=C-1:N=207
1040 IFA$="A"THENS=S-22:C=C-22:N=215
1050 IFA$="Z"THENS=S+22:C=C+22:N=225
1060 W=PEEK(S):F=0
1070 IFW=102THENC=E:S=Q
1075 IFPEEK(Q+22)=102THENF=F+.25
1076 IFPEEK(Q-22)=102THENF=F+.25
1077 IFPEEK(Q-1)=102THENF=F+.25
1078 IFPEEK(Q+1)=102THENF=F+.25
1090 IFF=1THEN2000
1100 SC=SC+1
1110 H=7680+INT(RND(0)*484):IFPEEK(H)=102THEN1110
1120 J=H+30720:POKEH,102

```

```

1130 M=INT(RND(0)*7):IFM=1THEN1130
1140 POKEJ,M
1150 POKE36874,N:POKE36875,N+1
1200 POKEE,1
1210 POKEC,2:POKES,216
1220 B$=A$
1230 GOTO1000
2000 POKE36878,0
2010 PRINT"XXXXXXXXXXII'VE GOT YOU!!"
2020 PRINT"XXXXXXXXYOU SCORED"SC#236
2030 GOTO2030
9490 PRINT"J"
9540 S=7954
9550 C=38674
9570 B$="."
9590 FORZ=7680T07701:POKEZ,102:POKEZ+30720,2:NEXT
9600 FORZ=8164T08185:POKEZ,102:POKEZ+30720,2:NEXT
9620 FORZ=7680T08164STEP22:POKEZ,102:POKEZ+30720,2:POKEZ+21,
102:POKEZ+30741,2:NEXT
9630 POKE36878,15
9640 RETURN

```

# Reaction

Your reactions come under scrutiny in this program which uses double-height characters. When you run the program, you'll see the words STAND BY appear. Then the screen will clear, and after a random time, the words OK NOW PRESS THE SPACE BAR will appear. You must hit the space bar immediately. If you do so within the time limit, the words HEY YOU DID IT come up on the screen, and the process will start again. However, the time available to you to react will decrease.

The process will continue, with you being given a shorter and shorter time to react each time. Eventually you will fail, and a "reaction rating" (LOUSY, FAIR, PRETTY GOOD, VERY GOOD, or YOU'RE THE CHAMP) will be given, depending on how short the time of your last successful reaction was.

```

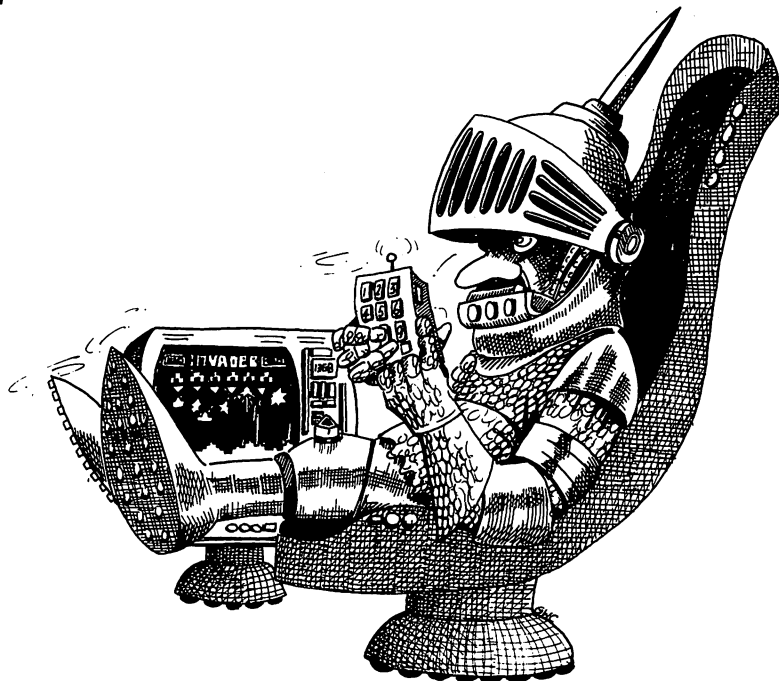
10 REM REACTION
15 DIMR$(4)
20 PRINT"J"
30 GOSUB9000
40 A$="XXXXXXXXSTANDBY"
50 B$="OKNOWPRESSITHEXXXXXXXXSPACEBAR"
60 D$="XXXXHEYYOUIDIDIT"
70 Q=50
900 PRINT"J" A$
985 FORT=1T0500:NEXT
990 FORT=1T0100+RND(0)*400

```

```

992 IFRND(0)>.99THENPRINT"J"
995 NEXT
1000 GETF$: IFF$<" " THEN1000
1010 PRINT" B$"
1020 E=TI
1030 GETF$: IFF$=" " THEN1030
1040 G=TI-E: PRINT" "
1050 IFG<Q+1THENPRINTD$
1060 IFG>QTHEN1120
1070 FORT=1TO2000: NEXT
1075 Q=Q-INT(RND(0)*5+2)
1080 GETF$: IFF$<" " THEN1080
1090 GOTO980
1120 PRINT" "
1125 IFQ>40THENPRINT"LOUSY"
1130 IFQ<41ANDQ>30THENPRINT"FAIR"
1140 IFQ<31ANDQ>20THENPRINT"PRETTYGOOD"
1150 IFQ<21ANDQ>10THENPRINT"VERYGOOD"
1160 IFQ<11THENPRINT"YOU'RETHECHAMP"
1180 FORT=1TO1000: NEXT
1190 PRINT" "
1200 PRINT"NEWGAMENCOMINGUP"
1210 FORT=1TO5000: NEXT
1220 GOTO70
9000 POKE56, 28: A=32776: FORB=7184TO7600STEP2
9005 POKEB, PEEK(A): POKEB+1, PEEK(A)
9007 A=A+1: NEXT
9010 POKE36879, 25: POKE36869, 255
9015 POKE36867, 47
9020 RETURN

```



# Spacetrek

You are in command of a galactic probe ship, responsible for the safety of a ten-by-ten sector of space, containing the Antares, Procyon, Rigel, Vega, Canopus, Altair, and Sagittarius sectors of the known galaxy (see lines 8540 to 8610). This area of space contains a number of rather slow-witted aliens. They are immobile during a game, although their positions will, of course, be different from game to game.

You have a limited amount of energy, and your task in the game is to roam the galaxy, making use of your long- and short-range scanners when you choose to do so to locate and then destroy the aliens. A direct hit is not always successful, and your firing on the aliens often enrages them so that they fire back at you. If they hit you, the damage you sustain is measured in energy units, decreasing the energy you have left to use. Moving, firing, and using the scanners all consume energy. Long-range scanners use up more energy than short-range ones.

When you run the program, you'll see the sector space drawn out in the bottom left of the screen. At first it will be blank except for you—the red inverse dollar sign in the middle. Under the sector are the words YOU ARE IN RIGEL SECTOR AT 5 5 - ENERGY 1234 and at the top of the screen are your three options 1 - SCAN 2 - MOVE 3 - FIRE. You enter one of the three numbers.

SCAN works in one of two ways. If you enter 1 to show you wish to scan, the words SCANNER: SHORT (1) OR LONG (2) RANGE will appear. Short-range looks at the squares immediately surrounding the one you are in, and reports if there is anything there. It does not tell you in which direction. Long-range allows you to choose the direction and gives a readout of what is two squares away in that direction. As I mentioned earlier, captain, long-range scanning uses up more energy than short-range scanning does. If you told the VIC you wished to scan north, it will reply SCANNER IS POSITIVE (which means an alien ship is to the north of you) or SCANNER IS NEGATIVE which means the square two to the north of you is empty.

You have to try and kill as many aliens as you can before you run out of energy, but as each action uses up energy, you must judge your moves most carefully before making them. If you fire into an empty square, it will turn into an inverse blue X so you know not to shoot into that square again, although you may move through it if you like. A direct hit gets an inverse purple asterisk in the relevant square.

You'll find that playing the game will teach you more about how to play it than these instructions will. When you enter FIRE or MOVE as your choice, you'll be asked to indicate the direction you want. First the computer will ask N/S (for north or south), and if you wish to move in one of these directions, enter N or S. Just press RETURN if you do not want to move up or down. Then you'll be asked to choose from east or west. Again, just press RETURN if you do not want to move east or west. You can combine moves to move, for example, northeast, or southwest, if you like.

The program is very tight on space, with just over 100 bytes left when the game is underway, so a number of error-trapping routines, which would have been useful, have been left out. Certainly you should add them if you have memory. Note that the short-range scanner cannot be used in the outer circuit (that is, if either coordinate is 1 or 10). The long-range scanner cannot be used if either coordinate is 1, 2, 9, or 10.

There is nothing in the program to stop you from trying to move off the galactic grid, but trying to do so will cause the program to crash. Add your own choice of name for an alien in line 9240 if you don't like mine.

If you have extra memory, some sound would certainly enliven the action. As well, you could add a routine to move the aliens slowly about, and one to put the name of a new member before each report (reports being direction of move or fire, location, energy level, information on whether you've been hit or not, and so on), with the actual crewmember making the report changing from time to time.

```

20 GOSUB9000
25 GOSUB8000
40 PRINT"ENERGY"INT(E)
41 IFE<1THEN3800
42 IFAL>0THENPRINT"TALLY"AL
130 PRINT"001-SCAN 2-MOVE 3-FIRE":INPUTD
156 IFD=1THENGOSUB1000
157 IFD=2THENGOSUB2000
158 IFD=3THENGOSUB3000
160 GOTO40
1000 GOSUB8000
1010 PRINT"SHORT SCANNER:"
1040 PRINT"SHORT(1) OR":PRINT"LONG (2) RANGE":INPUTK
1080 E=E-10*K:F=0
1100 IFK=2THEN1500
1120 IFA(B+1,C)=1ORA(B+1,C+1)=1ORA(B,C+1)=1ORA(B-1,C)=1ORA
(B-1,C-1)=1THENF=1:GOTO1130
1125 IFA(B,C-1)ORA(B+1,C-1)=1ORA(B-1,C+1)=1THENF=1
1130 IFF=0THENPRINT"NEGATIVE":GOTO1670
1140 IFF=1THENPRINT";Z#" NEAR":GOTO1670
1500 PRINT"DIRECTION N-1, S-2, E-3, W-4":INPUTH:Z=0
1560 IFN=1ANDA(B-2,C)=1THENZ=1
1570 IFN=2ANDA(B+2,C)=1THENZ=1
1580 IFN=3ANDA(B,C+2)=1THENZ=1
1590 IFN=4ANDA(B,C-2)=1THENZ=1
1640 PRINT"SCANNER IS ";
1650 IFZ=1THENPRINT"POSITIVE"
1660 IFZ=0THENPRINT"NEGATIVE"
1670 FORT=1TO2000:NEXT:GOSUB8000:RETURN
2000 E=E-50:A(B,C)=0:B(B,C)=0
2010 A$="":B$=""
2060 INPUT"DIRECTION (N/S)";A$
2100 IFA$="N"THENB=B-1
2120 IFA$="S"THENB=B+1
2140 PRINT"NOW AT"B" "C
2150 INPUT"KE/W)";B$
2160 IFB$="E"THENC=C+1
2165 IFB$="W"THENC=C-1
2170 PRINT"NOW AT"B" "C
2180 FORI=1TO1000:NEXT
2260 IFA(B,C)=1THEN5500
2270 A(B,C)=2:B(B,C)=2
2290 GOSUB8000
2300 RETURN
3000 G=B:A$=""
3005 PRINT"DIRECTION OF FIRE":INPUT"(N/S)";A$:IFA$="N"THENG=G-1

```



# Biorhythms

This program is based on the three cycles that affect us throughout our lives—the physical, emotional, and mental cycles. The 23-day physical cycle relates to such things as strength, aggressiveness, and endurance. The emotions are said to be affected by a 28-day cycle, which relates to optimism/pessimism, frustration, temper, and moodiness. The mental cycle is 33 days long, and this relates to logic, common sense, reasoning, and ease of expression.

When you run the program, you'll be asked to enter your date of birth (following the clear prompts), and the day for which you want a biorhythm calculated. The computer will give you three forecasts—the day before the one you've specified, the day you want, and the one that follows it.

You are then given the option of asking for a new forecast (based on the same date of birth) or of stopping the program. A zero rating is a neutral day; positive figures are a good sign, while negative ones are warnings of a bad day in the area governed by that particular cycle. If all three are negative, you'd better stay in bed for the day.

```
10 REM BIORHYTHMS
15 REM ALASTAIR GOURLAY/TIM HARTNELL
20 PRINT"DATEENTER YOUR DATE OF BIRTH"
30 INPUT"YEAR (AS 1984)";A
40 INPUT"MONTH (AS 7)";B
50 INPUT"DAY (AS 21)";C
60 A=A*365.25+B*30.4+C
70 PRINT"DATEAND NOW THE DATE FOR YOUR BIORHTHM"
80 INPUT"YEAR (AS 1984)";B
90 INPUT"MONTH (AS 7)";C
100 INPUT"DAY (AS 21)";D
110 B=B*365.25+C*30.4+D-A
112 PRINT"J"
115 FORF=-1TO1
116 IFF=-1THENPRINT"PREVIOUS DAY:";B=B-1
117 IFF=0THENPRINT"DAY OF FORECAST:";B=B+1
118 IFF=1THENPRINT"NEXT DAY:";B=B+1
120 C=23
130 PRINT"PHYSICAL:";
140 GOSUB250
150 C=28
160 PRINT"EMOTIONAL:";
170 GOSUB250
180 C=33
190 PRINT"INTELLECTUAL:";
200 GOSUB250
205 NEXTF
210 PRINT"DATEENTER 'Y' FOR A NEW FORECAST, 'N' TO STOP"
220 GET W$:IFW$=""THEN220
230 IFW$="Y"THEN70
240 END
250 PRINTINT(100*SIN((B-INT(B/C)*C)/C*44/7));"%
260 RETURN
```





# Quack

In this rather daft game, you have to shoot the little purple ducks flying overhead. You shoot by pressing the space bar. You can move yourself right and left by pressing the "Z" and "M" keys respectively. Your score at the end of a limited time—which clocks down on the screen throughout the game—relates to the number of hits you had, compared with the number of shots you fired, so you cannot get a high score just by firing over and over again.

The quacks do not fly in a totally predictable manner, which adds to the challenge. The sound and display when you score a "hit" are quite satisfying. Note that there is a time penalty imposed every time you press the space bar, another good reason for firing with moderation.

```
10 REM QUACK
20 PRINT"Q":POKE36879,122
30 B=7:H=10:SC=0:HI=0:FC=0
40 FORP=1TO50
45 IFP=41THENPRINT"Q"
50 PRINT"QTIME"50-P" SHOTS"FC
100 FORZ=0TO20
110 POKE7768+Z,127
115 POKE7769+Z,81
120 POKE38488+Z,4
125 POKE38489+Z,4
142 GOSUB500
143 SC=SC+HI
144 IFHI=1THENPOKE36879,8:POKE36879,122
145 IFHI=1THENPRINT"QSCORE"SC:HI=0
147 POKE38488+Z,B
148 POKE38489+Z,B
150 IFRND(1)>.4THENIFZ<17THENZ=Z+2
160 NEXT
170 NEXTP
180 PRINT"QTIME IS UP"
190 PRINT"SUCCESS RATE"INT(10000*(SC+.00001)/(FC+.00001))/100%"
200 END
500 POKE38862+H,B
520 GETA$
530 IFA$="Z"THENIFH>1THENH=H-1
540 IFA$="M"THENIFH<20THENH=H+1
560 POKE38862+H,0
570 POKE8142+H,80
575 IFA$=" "THENGOSUB1000
580 RETURN
1000 REM SHOT
1002 FC=FC+1:P=P+1:IFP>49THENRETURN
1003 IFP=41THENPRINT"Q"
1004 PRINT"QTIME"50-P" SHOTS"FC
1005 FORY=8098TO7768STEP-66
1010 POKEY+H,90
```

```

1020 POKEY+H+30720,0
1050 POKEY+H+30720,B
1060 NEXT
1065 IFH=ZORH=Z+1THENHI=1:POKE36878,15:POKE36875,
    230+H:FORT=1T03:NEXT:POKE36878,0
1070 RETURN

```

# Magic Square

The clever computer generates a three-by-three magic square, replacing three or four of the numbers with zero. As you probably know, each line of numbers in magic square (vertically, horizontally, and diagonally) adds up to the same total. It is your task to work out what the missing numbers are.

If there is already at least one complete row, it is fairly easy, with a bit of swift mental arithmetic, to determine (a) the total and (b) what digit will complete one of the other rows. This new digit should help you with another row and so on. If, however, there is not a single complete row, as sometimes happens, your task will be much harder.

The computer counts the number of moves it takes you to complete the square, and then gives you a score at the end, which is related to the number of wrong guesses you made on your way to solving the problem.

```

10 REM MAGIC SQUARE
20 A=INT(RND(0)*9)+1:M=6
30 PRINT"J":J=0
40 B=INT(RND(0)*9)+1:C=INT(RND(0)*9)+1
50 IFA=BORA=CORB=CTHEN40
60 A(1)=A+B:A(2)=A-(B+C):A(3)=A+C:A(4)=A-B+C:A(5)=A
70 A(6)=A+B-C:A(7)=A-C:A(8)=A+B+C:A(9)=A-B
140 F=0
150 FORZ=1T09:B(Z)=A(Z)
160 IFB(Z)=0THENF=1
170 NEXT:IFF=1THENRUN
180 B(A)=0
190 D=INT(RND(0)*9)+1
200 IFD<>AANDD<>BANDD<>CTHENM=M-1
205 B(D)=0
210 B(B)=0
220 B(C)=0
225 GOTO235
230 GOTO310
235 J=J+1
240 PRINT"*****GUESS NO."J
250 PRINT"***"
255 FORZ=1T09
260 PRINTB(Z);" ";
270 IFZ=3ORZ=6THENPRINT:PRINT

```

```

280 NEXT:PRINT
290 IFM<>9THENPRINT"YOU HAVEII"M"RIGHT
300 IFM=9THENPRINT"YOU HAVE SOLVED IT":PRINT"YOU SCORED"
    INT(10000/J)
305 IFM=9THENFORT=1TO6000:NEXT:RUN
310 INPUT"YOUR GUESS";W
320 M=0
330 FORZ=1TO9
350 IFA(Z)=WTHENB(Z)=W
360 IFB(Z)<>0THENM=M+1
370 NEXT
380 GOTO235

```

# Simon

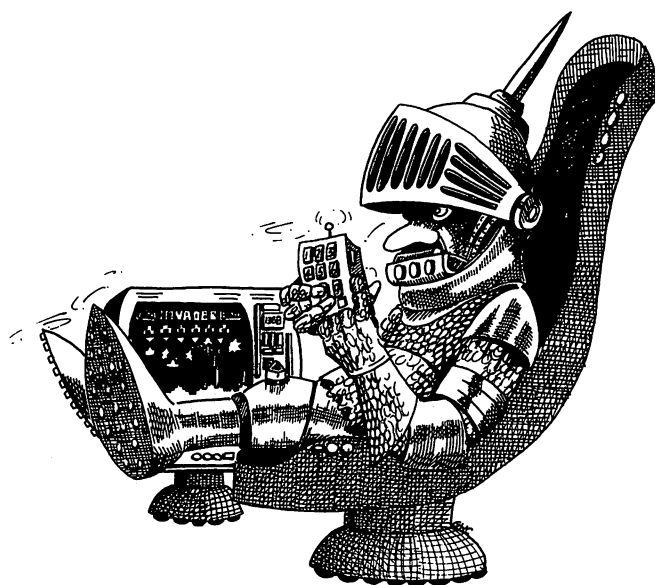
Simon appears simple to play, but can be infuriatingly difficult. Your task is to copy the growing string of numbers the VIC creates. It will start with one number between one and four, printing on the screen in a distinctive color, in a specific position, and sounding a corresponding note. You repeat the number, and it will reappear, with the position, color, and sound as before . . . if you are correct. The first number will then be repeated, followed by a second number. You must repeat both of these, continuing as the sequence of notes and numbers builds up, until you either get a sequence of seven correct or make a mistake.

You'll find that you'll improve dramatically with practice. Note that if the same number appears twice in a row, you have to remove your finger from the key after pressing it the first time. The border changes throughout the game to keep you on your toes.

```

5 REM SIMON
10 A$(1)="1"
20 A$(2)="2"
30 A$(3)="3"
40 A$(4)="4"
50 FORT=1TO4:READS(T):NEXT
60 POKE36878,15:PRINT"Q"
70 FORC=1TO7
80 LETB(C)=INT(RND(0)*4)+1
90 NEXT
95 LETX=1
100 FORQ=1TOX:POKE36879,23+X
110 GOSUB700
150 NEXTQ
160 FORQ=1TOX
170 GETE$:IFE$=""THEN170
180 LETF=VAL(E$)
190 IFFC<>B(Q)THEN500
200 GOSUB700
260 NEXTQ

```



```

270 X=X+1:IFX>7THEN280
275 FORT=1TO600:NEXT:GOTO100
280 PRINT"WELL DONE. YOU DID IT"
290 GOTO290
500 PRINT"YOU BLEW IT"
510 PRINT"YOU SCORED"X-1
520 END
700 C#=A$(B(Q))
705 FORT=0TO1 :PRINT"♠"
710 FORR=1TO3*(B(Q)+T)
720 PRINT"♠";
730 NEXT
740 PRINTC#
745 NEXTT
750 POKE36875,S(B(Q))
760 FORY=1TO350:NEXT
762 POKE36875,0
765 PRINT"♣"
770 RETURN
780 DATA195,207,215,225

```

# Roulette

Roulette is one of the classic gambling games, and with this program you're ready to try out your "system" for beating the wheel . . . without losing your shirt.

The first program allows full casino betting, playing by the European rules, with a wheel with the numbers one to 36, plus zero. The American wheel used in the second program has the numbers one to 36, plus zero and double zero.

The roulette table has the numbers one to 36, some in black and some in red, on it, plus the zero (and, in the case of the American system, the double zero). You can place bets on a wide variety of number combinations. Once the bets are placed, the wheel is spun, and the croupier throws a ball into the wheel, in the opposite direction to the spin. The ball ends up resting on one of the numbers and this determines your fate.

When you run the program, you'll see the words YOU HAVE 100 CHIPS. After a short pause, the words MESSIEURS, FAITES VOS JEUX (Gentlemen, place your bets) appear. You then enter a letter of the alphabet from A to P (or Q to quit the game) which indicates which type of bet you wish to place. Here is the key to enter your bets:

- A — A single number
- B — Two adjoining numbers
- C — Three numbers in adjoining columns
- D — Six numbers in adjoining columns
- E — Four numbers in a square
- F — Numbers one to 12 (known as the First Twelve)
- G — Numbers 13 to 24 (the Second Twelve)

- H – Numbers 25 to 36 (the Third Twelve)
- I – Numbers one to 18 (Low)
- J – Numbers 19 to 36 (High)
- K – 12 numbers in a horizontal row
- L – Two adjacent horizontal columns
- M – Any red number (see below for a list of red and black numbers)
- N – Any black number
- O – Any even number
- P – Any odd number
- Q – To quit the game

The red numbers are:

1, 3, 5, 7, 9, 12, 14, 16, 18, 19, 21, 23, 25, 27, 30, 32, 34, 36

The black numbers are:

2, 4, 6, 8, 10, 11, 13, 15, 17, 20, 22, 24, 26, 28, 29, 31, 33, 35

You will not be allowed to bet more chips than you have, and you may withdraw from the wheel at any time. The bank only holds 1,000 chips; so if you get a total of 1,100 in hand (the bank's 1000, plus your original 100 chips), the game must end, when you'll be the one who broke the bank at Monte Carlo.

Once you've spent a bit of time gambling with this program, you may wish to try some of the "systems" that have evolved for roulette. One of the most popular is the Martingale, in which you stick to the same number, or group of numbers, doubling the bet each time you lose, so you bet one chip the first spin, two the next (if you lost on the first), four the next, and so on. This ensures, in theory, that any win should wipe out all previous losses, and give you a profit as well. Most systems are systematic only in that they help you lose your money in record time. However, it is far better to try out a system with the program than with an actual wheel. Sir Hiram Maxim, the inventor of the first automatic repeating gun (hardly an achievement likely to make him an expert on roulette wheels), is said to have said that "a bad system is better than none at all." Balance this against the advice of William Makepeace Thackeray: "You have not played yet? Do not do so; above all, avoid a martingale if you do."

```

1 REM ROULETTE - EUROPEAN
3 POKE36879,26
5 PRINT"J": GOTO20
10 FORK=1TO800:NEXT:PRINT:RETURN
20 DIMB(24):CH=100
40 PRINT"YOU HAVE"CH"CHIPS"
50 GOSUB10
60 PRINT"MESSIEURS, FAITES      VOS JEUX"
70 GETA$:IFA$=""THEN70
72 A=ASC(A$)-64:IFA<10RA>17THEN70
75 IFA=17THEN4000
80 FORQ=1TO24:B(Q)=-99:NEXT
110 INPUT"HOW MANY CHIPS":N:IFN>CHTHEN110
120 CH=CH-N

```

```

130 IFA=1THENGOSUB2600
131 IFA=2THENGOSUB2640
132 IFA=3THENGOSUB2680
133 IFA=4THENGOSUB2720
134 IFA=5THENGOSUB2760
135 IFA=6THENGOSUB2800
136 IFA=7THENGOSUB2840
137 IFA=8THENGOSUB2880
138 IFA=9THENGOSUB2920
139 IFA=10THENGOSUB2960
140 IFA=11THENGOSUB3000
141 IFA=12THENGOSUB3040
142 IFA=13THENGOSUB3080
143 IFA=14THENGOSUB3120
144 IFA=15THENGOSUB3160
145 IFA=16THENGOSUB3200
150 GOSUB10
160 PRINT"WHEEL IS SPINNING":GOSUB10
170 GOSUB10:PRINT"J"
180 FORB=1TO75:C=INT(RND(0)*37):PRINT"J0000"C:FORT=1TO3#B
185 NEXT:GOSUB5000:NEXT
190 GOSUB10:PRINT"BALL HAS ENDED AT"C
240 Y=0:E=1
250 IFB(E)=CTHENY=1:GOTO270
260 IFE<24THENE=E+1:GOTO250
270 IFY=0THEN370
290 WI=OD*N:CH=CH+WI
310 PRINT"CONGRATULATIONS, YOU HAVE WON"WI"CHIPS"
330 GOSUB10
350 GOSUB400
360 GOTO40
370 PRINT"SO YOU LOSE":GOTO330
400 IFCH<1THENPRINT"YOU HAVE RUN OUT OF CHIPS":END
410 IFCH>1100THENPRINT"YOU HAVE BROKEN THE BANK!":END
420 RETURN
2600 INPUT"WHICH NUMBER";D:B(1)=D:OD=35:RETURN
2640 INPUT"WHICH TWO NUMBERS";B(1),B(2):OD=17:RETURN
2680 PRINT"WHICH NUMBER":INPUT" IN LEFT COLUMN";D
2690 FORE=0TO2:B(E+1)=D+E:NEXT:OD=11:RETURN
2720 INPUT"FIRST NUMBER OF SIX";D:FORE=0TO5:B(E+1)=D+E:NEXT:OD=5:
RETURN
2760 INPUT"1ST NUMBER IN SQUARE";D:FORE=0TO3:B(E+1)=D+E:IFE=2
THEND=D+1
2770 NEXT:OD=8:RETURN
2800 FORE=1TO12:B(E)=E:NEXT:OD=2:RETURN
2840 FORE=1TO12:B(E)=E+12:NEXT:OD=2:RETURN
2880 FORE=1TO12:B(E)=E+24:NEXT:OD=2:RETURN
2920 FORE=1TO18:B(E)=E:NEXT:OD=1:RETURN
2960 FORE=1TO8:B(E)=E+18:NEXT:OD=1:RETURN
3000 PRINT"LOW NUMBER AT END":INPUT"OF LINE";D
3010 FORE=0TO11:B(E+1)=3#E+D:NEXT:OD=2:RETURN
3040 INPUT"LOW NO. 1ST COLUMN";D1:INPUT"LOW NO. 2ND COLUMN";
D2:IFABS(D1-D2)>1THEN3040
3050 FORE=0TO11:B(E+1)=3#E+D1:B(E+13)=3#E+D2:NEXT:OD=.5:RETURN
3080 RESTORE

```

```

3090 FORE=1TO18:READB(E):NEXT:OD=1:RETURN
3120 RESTORE:FORE=1TO18:READZ:NEXT:FORE=1TO18:READB(E):NEXT:OD=1:
RETURN
3160 FORE=2TO36STEP2:B(E/2)=E:NEXT:OD=1:RETURN
3200 FORE=1TO35STEP2:B((E+1)/2)=E:NEXT:OD=1:RETURN
3210 DATA1,3,5,7,9,12,14,16,18,19,21,23,25,27,30,32,34,36
3220 DATA2,4,6,8,10,11,13,15,17,20,22,24,26,28,29,31,33,35
4000 PRINT"YOUYOU ARE WITHDRAWING FROM THE GAME WITH "CH"CHIPS"
4010 END
5000 POKE36878,5
5010 POKE36877,130+B:POKE36875,130+B
5020 POKE36878,0:POKE36877,0:POKE36875,0
5030 RETURN

```

```

1 REM ROULETTE - AMERICAN
3 POKE36879,26
5 PRINT"J":GOTO20
10 FORK=1TO800:NEXT:PRINT:RETURN
20 DIMB(24):CH=100
40 PRINT"YOU HAVE"CH"CHIPS"
50 GOSUB10
60 PRINT"MESSIEURS, FAITES VOS JEUX"
70 GETA$:IFA$=""THEN70
72 A=ASC(A$)-64:IFA<10RA>17THEN70
75 IFA=17THEN4000
80 FORQ=1TO24:B(Q)=-99:NEXT
110 INPUT"HOW MANY CHIPS":N:IFN>CHTHEN110
120 CH=CH-N
130 IFA=1THENGOSUB2600
131 IFA=2THENGOSUB2640
132 IFA=3THENGOSUB2680
133 IFA=4THENGOSUB2720
134 IFA=5THENGOSUB2760
135 IFA=6THENGOSUB2800
136 IFA=7THENGOSUB2840
137 IFA=8THENGOSUB2880
138 IFA=9THENGOSUB2920
139 IFA=10THENGOSUB2960
140 IFA=11THENGOSUB3000
141 IFA=12THENGOSUB3040
142 IFA=13THENGOSUB3080
143 IFA=14THENGOSUB3120
144 IFA=15THENGOSUB3160
145 IFA=16THENGOSUB3200
150 GOSUB10
160 PRINT"WHEEL IS SPINNING":GOSUB10
170 GOSUB10:PRINT"J"
180 FORB=1TO75:C=INT(RND(0)*38)-1:PRINT"THE"C:FORT=1TO3*B
182 IFC<>-1THENPRINT"THE"C
183 IFC=-1THENPRINT"THEDOUBLE ZERO"
184 FORT=1TO3*B
185 NEXT:GOSUB5000:NEXT
186 GOSUB10:PRINT"J"

```

```

187 IFC<>-1THENPRINT"BALL HAS LANDED AT"C
190 IFC=-1THENPRINT"BALL HAS LANDED ON    DOUBLE ZERO"
240 Y=0:E=1
250 IFB(E)=CTHENY=1:GOTO270
260 IFE<24THENE=E+1:GOTO250
270 IFY=0THEN370
290 WI=OD*N:CH=CH+WI
310 PRINT"CONGRATULATIONS, YOU    HAVE WON"WI"CHIPS"
330 GOSUB10
350 GOSUB400
360 GOTO40
370 PRINT"SO YOU LOSE":GOTO330
400 IFCH<1THENPRINT"YOU HAVE RUN OUT OF    CHIPS":END
410 IFCH>1100THENPRINT"YOU HAVE BROKEN THE    BANK!":END
420 RETURN
2600 INPUT"WHICH NUMBER";D:B(1)=D:OD=35:RETURN
2640 INPUT"WHICH TWO NUMBERS";B(1),B(2):OD=17:RETURN
2680 PRINT"WHICH NUMBER":INPUT"    IN LEFT COLUMN";D
2690 FORE=0TO2:B(E+1)=D+E:NEXT:OD=11:RETURN
2720 INPUT"FIRST NUMBER OF SIX";D:FORE=0TO5:B(E+1)=D+E:NEXT:OD=5:
RETURN
2760 INPUT"1ST NUMBER IN SQUARE";D:FORE=0TO3:B(E+1)=D+E:IFE=2
THEND=D+1
2770 NEXT:OD=9:RETURN
2800 FORE=1TO12:B(E)=E:NEXT:OD=2:RETURN
2840 FORE=1TO12:B(E)=E+12:NEXT:OD=2:RETURN
2880 FORE=1TO12:B(E)=E+24:NEXT:OD=2:RETURN
2920 FORE=1TO18:B(E)=E:NEXT:OD=1:RETURN
2960 FORE=1TO8:B(E)=E+18:NEXT:OD=1:RETURN
3000 PRINT"LOW NUMBER AT END":INPUT"OF LINE";D
3010 FORE=0TO11:B(E+1)=3*E+D:NEXT:OD=2:RETURN
3040 INPUT"LOW NO. 1ST COLUMN";D1:INPUT"LOW NO. 2ND COLUMN";
D2:IFABS(D1-D2)>1THEN3040
3050 FORE=0TO11:B(E+1)=3*E+D1:B(E+13)=3*E+D2:NEXT:OD=.5:RETURN
3080 RESTORE
3090 FORE=1TO18:READB(E):NEXT:OD=1:RETURN
3120 RESTORE:FORE=1TO18:READZ:NEXT:FORE=1TO18:READB(E):NEXT:OD=1:
RETURN
3160 FORE=2TO36STEP2:B(E/2)=E:NEXT:OD=1:RETURN
3200 FORE=1TO35STEP2:B((E+1)/2)=E:NEXT:OD=1:RETURN
3210 DATA1,3,5,7,9,12,14,16,18,19,21,23,25,27,30,32,34,36
3220 DATA2,4,6,8,10,11,13,15,17,20,22,24,26,28,29,31,33,35
4000 PRINT"DO YOU ARE WITHDRAWING    FROM THE GAME WITH    "CH"
CHIPS"
4010 END
5000 POKE36878,5
5010 POKE36877,130+B:POKE36875,130+B
5020 POKE36878,0:POKE36877,0:POKE36875,0
5030 RETURN

```



# Appendix

## Error Messages

**BAD DATA...**String data was received, but program expecting numeric data.

**BAD SUBSCRIPT...**Element of an array outside of the range specified in the DIM statement.

**CAN'T CONTINUE...**The CONT command will not work, either because the program was never RUN, there has been an error, or a line has been edited.

**DEVICE NOT PRESENT...**The required I/O device was not available for an OPEN, CLOSE, CMD, PRINT#, INPUT#, or GET#.

**DIVISION BY ZERO...**Division by zero impossible.

**EXTRA IGNORED...**Too many items of data entered in response to an INPUT statement. Only the first few items accepted.

**FORMULA TOO COMPLEX...**String expression should be split into at least two parts.

**ILLEGAL DIRECT...**INPUT can only be used within a program, and not in direct mode.

**ILLEGAL QUANTITY...**Number used as argument of function or statement out of allowable range.

**LOAD...**Problem with program on tape.

**NEXT WITHOUT FOR...**Either incorrectly nesting loops, or having a variable name in a NEXT statement that doesn't correspond with one in a FOR statement.

**OUT OF DATA...**A READ statement executed but no data left unREAD in DATA statement.

**OUT OF MEMORY...**No more RAM available. May also occur when too many FOR loops nested, or too many GOSUBs in effect.

**OVERFLOW...**The result of a computation is larger than  $1.70141884E + 38$ .

**REDIM'D ARRAY...**An array may only be DIMensioned once.

**REDO FROM START...**Character data was typed in during an INPUT statement when numeric data was expected. Just re-type the entry so that it is correct, and the program will continue by itself.

**RETURN WITHOUT GOSUB...**RETURN statement encountered, when no GOSUB command issued.

**STRING TOO LONG...**A string can contain up to 255 characters.

**SYNTAX...**A statement is unrecognizable by the VIC. A missing or extra parenthesis, misspelled keywords, etc.

**TYPE MISMATCH...**This error occurs when a number is used in place of a string, or vice-versa.

**UNDEF'D FUNCTION...**A user defined function was referenced, but it has never been defined using the DEF FN statement.

**UNDEF'D STATEMENT...**An attempt was made to GOTO or GOSUB or RUN a line number that doesn't exist.



# ZAP! POW! BOOM!

## *Arcade Games for the Vic-20*

Tim Hartnell and Mark Ramshaw

**ZAPI POWI BOOMI** Now you can play arcade games at home on your exciting VIC-20 — making the most of your computer's powerful color and sound potential!

Just enter the programs as they are listed, and you'll enjoy hours of splendid color effects and a limitless range of noises. Or, tailor the programs to adapt your own ideas to them — there are plenty of ideas within the game to work with.

Write poetry with your VIC, work out biorhythms, create messages, in double-sized characters, drive your racing car on the VIC Speedway . . . and more! Just a sample of the programs you'll find in this fun-filled book:

- Gunfight** —outshoot the fastest draw in town, VIC. Move up and down on the screen, avoiding VIC's shots and fire back. Good shooting, partner.
- Scramble** —Bomb the enemies defense installations and shoot down fighters for points. As you move off the right of the screen, you appear on a new landscape. Avoid the enemy rockets and fighters as they stream through the skies. The small red balls are fuel dumps and the large circular objects on stilts are ammo dumps. And be careful not to get hit by the fire from the ground installations!
- Airplane** —You attempt to land your passengers safely on the runway—all of the controls are up to you!

Space Birds. Arkenstone. Symphony for a Melancholy Computer. Codebreaker. All these games and many, many more are included!

All programs fit the standard memory VIC-20. Several are supplied with special versions so you can use joysticks if you have them. Nonjoystick versions are also included. All games have been extensively play-tested . . . and have been passed with flying colors. Don't plan on going out too much in the next few months. You won't be able to tear yourself away from your VIC-20!



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